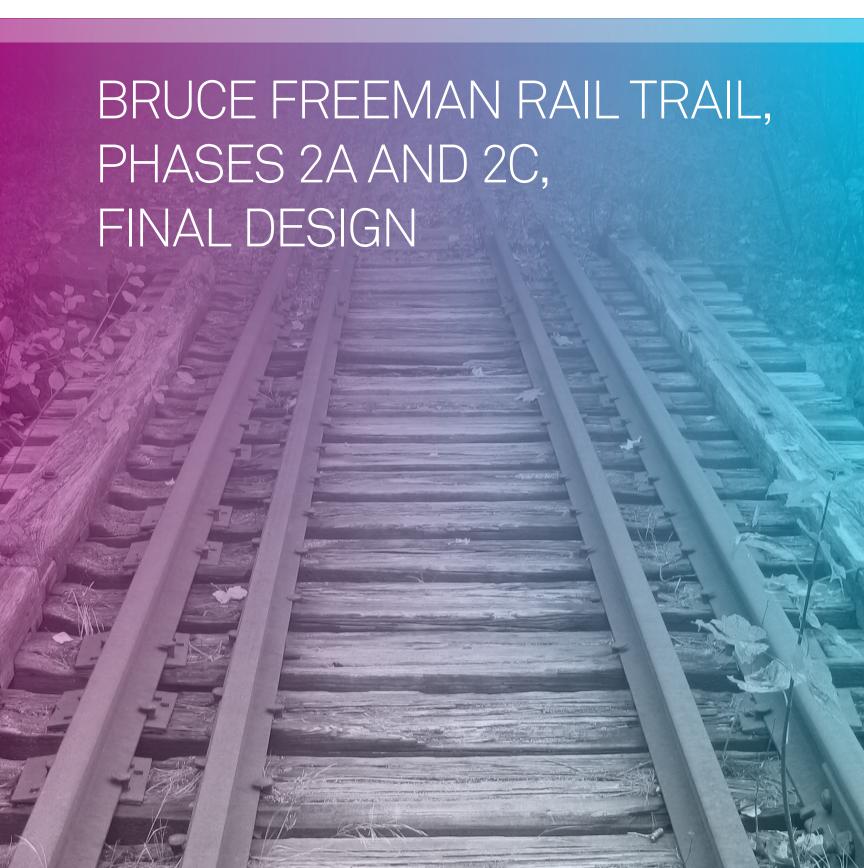
Statement of Qualifications

AECOM November 8, 2010

Submitted to **Town of Acton, MA**

Submitted by **AECOM Technical Services, Inc.**





AECOM 978 371 4000 tel 300 Baker Avenue, Suite 290 978 371 2468 fax Concord, MA 01742 www.aecom.com

November 8, 2010

Mr. Steve Ledoux Town Manager Acton Town Hall 472 Main Street Acton, MA 01720

Subject:

Request for Qualifications for "Final Design Services for Phases 2A and 2C of

the Bruce Freeman Rail Trail"

Dear Mr. Ledoux:

AECOM Technical Services, Inc. (AECOM) is pleased to submit this proposal for Final design Services for Phases 2A and 2C of the Bruce Freeman Rail Trail. Our team provides a broad range of professional services to assist the Towns of Acton, Concord, Carlisle, and Westford.

AECOM is prequalified by MassDOT in all the disciplines required for this project and has experience working on this project as well as projects similar in scope. With over 1200 professionals in New England, 600 hundred of which are in our Massachusetts Offices, AECOM offers services and expertise in all relevant areas required for this project. With our sub consultants Browne Richardson and Rowe, Green International and Lamson Engineering we offer a complete team that is working together on other projects and has the Local and State expertise needed to fulfill the project scope.

AECOM is currently under contract for the Route 2 Concord Rotary with MassDOT, as part of the project we have been leading a team of consultants to advance Segment 2B of the BFRT. We have analyzed many design issues in crossing Route 2, crossing Commonwealth Avenue, coordinating with the prison and the housing project in Concord. This is outlined in our similar project descriptions. AECOM was just notified by MassDOT that our Route 2 contract will be amended so we can continue through final design and construction phase services for Segment 2B of the BFRT.

AECOM is currently working with the Town of Acton on the Assabet River Rail Trail Project. We began work on this project a while back with an overall rail trail implementation plan from Marlborough to Acton to obtain funding for the project. The Marlborough and Hudson segments were opened a few years back and we are now in final design for the Acton and Maynard segments. We have begun conversations with Stow to provide the vital last link for the ARRT.

AECOM has the depth of staff needed to keep this project on schedule. We have presented an organization chart that sets up "Teams" for Segment 2A and Segment 2C. This will allow us to advance the designs concurrently and be ready as construction funding is made available.

We have included in our proposal a preliminary design schedule for the project. Although the RFQ did not request a schedule, we felt the inclusion of a schedule would help to demonstrate AECOM's depth of understanding of the MassDOT design process. This schedule is in Microsoft Project format as required by MassDOT.

We trust that you will find our proposal an outstanding match for your needs. We look forward to working with you on this project.

Very truly yours,

AEGOM Technical Services, Inc.

Nicholas Rubino, PE Project Director



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Section 1: Project Understanding and Approach

Phase 2 of the Bruce Freeman Rail Trail (BFRT) consists of the construction of a rail trail through the towns of Westford, Carlisle, Acton and Concord along the existing railroad right-of-way. Phase 2 will extend the previously constructed Phase 1 section of the BFRT from Route 225 in Westford to the Sudbury/Concord town line. Phase 2B will connect Phases 2A and 2C and will be done separately, by AECOM, as part of the Concord Rotary Project. **AECOM was notified last week, by MassDOT, that our contract for the Route 2 Rotary project will be amended to include the design of the Phase 2B section of the Bruce Freeman Rail Trail.**



AECOM has walked the right-of-way reviewed the available documentation and met with various stakeholders regarding Phase 2 of the BFRT, and has a clear understanding of the Project. The rail trail will pose several

design challenges as it runs through significant areas of concern to the abutters and respective communities. AECOM will work with the various stakeholders to produce a coordinated and acceptable design for all facets of this Project.

Connection to Phase 1 - Westford

This Project will connect to the previously constructed Phase 1 section of the BFRT at the intersection of Route 225 and Route 27. The intersection will be redesigned to accommodate the trail crossing of Route 225. An exclusive pedestrian phase will be incorporated into the traffic signals to provide a safe crossing for the rail trail users. A detailed description of how AECOM proposes to assist the Town of Westford in exploring opportunities for additional parking at this location is included later in this section.

North Acton Recreation Area (NARA)/Rex Lumber

The proposed rail trail alignment veers to the west away from the existing rail alignment at Rex Lumber in North Acton and runs adjacent to the North Acton Recreation Area (NARA). The Town of Acton is concerned with the proposed rail trail providing access to a greater number of users than currently access the area, leading to a variety of issues including unlawful parking, vandalism and unrestricted access to NARA facilities. AECOM will work with NARA and Town representatives to adequately resolve the issues while still providing local access to the BFRT.

Great Road (Route 2A) Crossing

A proposed bridge will route the BFRT across Great Road (Route 2A) in Acton. Due to the required vertical clearance and slope limitations, the bridge will require 400 foot approaches. The required approach length and the proximity of the wetlands along both sides of the north approach will make access to 2A difficult, and there are no existing sidewalks on 2A.

Nashoba Brook Conservation Land/Bay Circuit Trail

The Nashoba Brook Conservation Land (NBCL) lies northeast of the proposed crossing of Great Road (Route 2A). The Town of Acton has advocated for connecting the BFRT to the NBCL trail network. A connection to the NBCL would



also provide access to the Spring Hill Conservation Land and the Bay Circuit Trail, a 200 mile network of trails that links 50 cities and towns, from Kingston to Newburyport. A connection at the southwestern end of the NBCR could be provided as well. This connection could also provide access to Davis Road and, ultimately, a connection with Great Road (Route 2A).

West Concord Intersection

One challenging issue for the BFRT, is the routing of the trail through West Concord Center. AECOM has reviewed the alternative study done in the preliminary design phase and agrees that the most economical option routes the BFRT users to the Commonwealth Avenue and Church Street intersection, where they then walk their bikes along a widened north sidewalk to the Commonwealth Avenue and Main Street intersection, crossing to reconnect with the BFRT.



The proposed 12 foot sidewalk on the north side of Commonwealth Avenue would be carried the entire length of the existing sidewalk, up to and through the MBTA railroad crossing. The

widening of the sidewalk would require relocation and modification of the southeast MBTA crossing gate. Also, the existing railroad crossing at the platform would have to be modified to discourage trail users from crossing the tracks at this location. Fencing with offset openings and a relocated bituminous track crossing would encourage trail users to stay on the designated route along Commonwealth Avenue and



still provide access to the Station. AECOM has designed many commuter rail stations for the MBTA and has a strong working knowledge of MBTA standards. AECOM would not



differentiate the trail from the sidewalk along Commonwealth Avenue. Designating the trail along the sidewalk would lead to bicyclists riding along the sidewalk, increasing conflicts with pedestrians.

White Pond Reservation/ Powder Mill Road

The BFRT alignment runs adjacent to the White Pond Reservation in Concord. The White Pond Advisory Group feels that the BFRT will have significant impacts on White Pond and its surrounding areas due to the increased use provided for by the ease of access from the trail. The anticipated impacts are reduced water quality, erosion of the pond banks, litter and vandalism, noise and access to private property and access issues across the trail by the residents of Stone Root Lane. The Group has advocated for measures to discourage access to White Pond from the trail, while still providing aesthetically pleasing views from White Pond. AECOM will work with the White Pond Advisory Group, the Town of Concord and other interested parties to develop a context sensitive design that will balance the requirements of the BFRT and preserve the resources and the aesthetic beauty of the White Pond Reservation.



The White Pond
Advisory Group has
recommended that the
proposed access at
Powder Mill Road be
eliminated. There are
currently no sidewalks
or on-street parking
along Powder Mill Road

to provide access to the BFRT at this location. AECOM will work with the community to develop measures tao discourage vehicles from parking/stopping at this location through the use of fencing and landscaping.

Abutters

A major concern along the entire route of Phase 2 of the BFRT is the access the trail will provide to abutters along the trail. A small number of users currently utilize the trail. This will greatly increase when the rail trail is constructed. AECOM will work with the abutters to discourage trespassing by trail users onto abutters private property through the use of fencing, landscape screening, and signage.

Bridges

There are eight bridge crossings and one bridge underpass located along the Rail Trail which will require rehabilitation/reconstruction work to accommodate the proposed use. Previous studies of these bridge locations have been reviewed. The six existing bridges located in Acton and Westford are of similar construction - timber ties on steel beams supported by granite abutments. Recommendations of the previous studies for these bridges included replacement of the timber ties with new ties and timber decking and railings, along with associated steel and substructure repairs. Of the three bridges located to the north, in Concord, one is a ballasted concrete deck supported by steel girders, the other has had its superstructure removed and the third is a corrugated steel pipe under Powder Mill Road. The previous recommendation for the ballasted deck bridge is to remove the ballast, repair the deck, waterproof and install a new wearing surface. The bridge which has been removed is a single span of approximately 90 feet. The recommendation for this location is a prefabricated steel bridge superstructure supported on the existing abutments. AECOM is currently working on three projects that include pre-fabricated steel truss pedestrian bridges with timber decking. The bridges are all in the design phase. In order to accommodate maintenance vehicles for the trails/ paths, the bridges are being designed to accommodate a small pick-up truck. One of the projects has a bridge span of 170 feet. The underpass structure has been determined to have inadequate geometry for the proposed rail trail use and will therefore need to be replaced. AECOM will review all of the existing available documentation for these bridge locations, including previous studies, reports and estimates. We will also visit each location. For the majority of these locations, a MassDOT Bridge Type Selection Worksheet will not be required and the design will progress directly to sketch plans as per MassDOT standards once the survey base mapping is complete and the line and grade of the rail trail is established. Upon approval of sketch plans by MassDOT, the design will progress and Plans, Specifications and Estimates will be prepared. For the underpass structure, a more detailed preliminary assessment is suggested to consider traffic control on Powder Mill Road and considerations necessary to determine the best solution of structure type for the location. This location is very similar to the ARRT crossing of the Route 85 extension at the Marlborough/Hudson Town line that AECOM designed under MassDOT review. This will require a Bridge Type Selection Worksheet prior to proceeding to the Sketch Plan Phase. For all of the bridge locations, constructability and access to the sites along with costs will be an important consideration as the design is progressed.



Public Participation Approach

AECOM and its team members have extensive experience facilitating citizens', neighbors', local officials' and other stakeholders as part of complex, high profile, projects. During the preliminary design of the Sagamore Rotary Grade Separation project, Mr. Rubino led the efforts to coordinate with the business owners and the residents abutting the project area. Numerous Design Open Houses, Public Meetings and one-on-one meetings were held in order for the design team to gain input from the stakeholders. These meetings were also a way for AECOM to inform the stakeholders what MassDOT can and cannot include as part of the project. AECOM's approach is to spend more time one on one with key abutters and stakeholders to resolve specific design details. The Appendix contains sample materials from previous public meetings and public outreach.

AECOM and Brown, Richardson and Rowe (BRR) facilitated the Design Open Houses to date that were held in Concord for the Route 2 Rotary project and Segment 2B of the BFRT. For these projects the design team held two Open Houses to explain the project to the residents. The purpose of these meetings was first to listen, and understand the concerns of the abutters and stakeholders, then second, to present design refinements that incorporate (where possible) the input from the Open House. Where specific input was not able to be incorporated, AECOM explained in detail to the stakeholder the issues and why the design was not refined as per their input.



Route 2 Rotary Project - Open House



BRR was also involved in the Public Meeting presentations for the Crosby's Corner project in Concord.
BRR will prepare various graphics and visualizations so the residents can understand what the project will look like when constructed.

We understand from the DOT project info the 25% design public hearing for phase 2A was held on October 29, 2008 and the design public hearing for Phase 2C was held on June 25, 2009. We also see that a Public Hearing budget was established as part of the future scope and fee. AECOM will prepare for and facilitate public hearings as needed.

AECOM believes that for this project design development meetings are critical and more beneficial to the design process. During the design development phase, AECOM will meet with the stakeholders one-on-one to address specific concerns. The one-on-one meetings will allow AECOM the opportunity to advise the stakeholders on what MassDOT funding requirements will allow as part of the project.





North Street Salem, 25% Design Hearing

AECOM's office location in Concord will allow our staff to meet with the stakeholders anytime. We envision a series of Design Development Days (DDD). We have a large conference room in our building where we could host DDD. A day long meeting would allow the maximum number of stakeholders to view the design progress and provide valuable input. We would anticipate hosting two or three of these DDD as the design progresses. These will consist of notifying the stakeholders that on certain days the AECOM Concord office will be open.

A schedule will be provided stating what time of day what portion of the project will be discussed. Residents and stakeholders can come to the AECOM office and provide input on the design in their neighborhood, or stay for the day and provide input for the entire corridor. These DDD will be scheduled from around 12:00 PM to 8:00 PM to allow for residents to come during the day or after work. The fact that it is held at the AECOM office and is part of design development allows us to maintain schedule without additional effort.



Route 2 Rotary Project - Open House



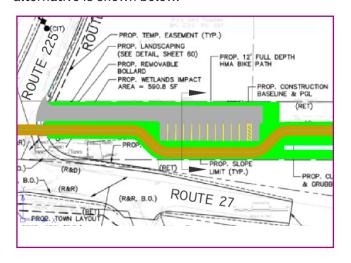
Route 2 Rotary Project - Open House



Rail Trail Parking

In coordination with the Town of Westford AECOM will identify and evaluate potential vehicle parking locations for users of the Bruce Freeman Rail Trail neighboring the intersection of Routes 27 and 225. The existing parking spaces in this area are insufficient in regards to both safety and quantity. No clear parking area is defined or marked, and access directly off Route 27 poses potential dangers for both arriving and departing vehicles.

AECOM has taken a preliminarily look at parking options for this location and suggests that the trail be shifted to the western edge of the ROW as it approaches the intersection from the south. By moving the path to one side of the ROW there is sufficient space for twelve or more parking spaces within the rail trail property lines. The parking area would be accessed from a driveway on Route 225. Entering and exiting vehicles would be able to access the driveway without interfering with the operations of the signalized intersection. A sketch and cross section of the alternative is shown below.

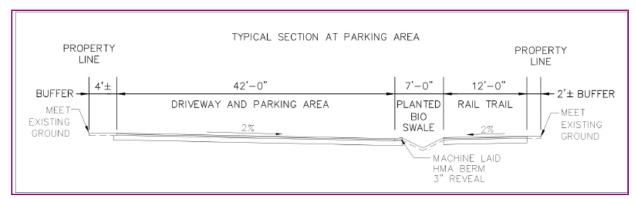


The proposed configuration includes twelve standard 9'x19' parking spaces, one of which will be designated for handicap use. A four foot buffer is included between the access driveway and the property to the east. A two foot landscape/grass strip is also included between the driveway and the property to the west. A seven foot planted bio-swale is included between the parking spaces and the Trail.



A natural "Rain Garden" stormwater bio-swale is shown on the Lowell Concord River Greenway Project where we have parking very close to the trail.

To offset the impact of the increase in impervious created by the parking area AECOM suggests that a rain garden bio-swale could be constructed between the parking and the trail. AECOM has used rain gardens in other rail trail applications with very positive results. They provide for treatment of stormwater and recharge to groundwater.

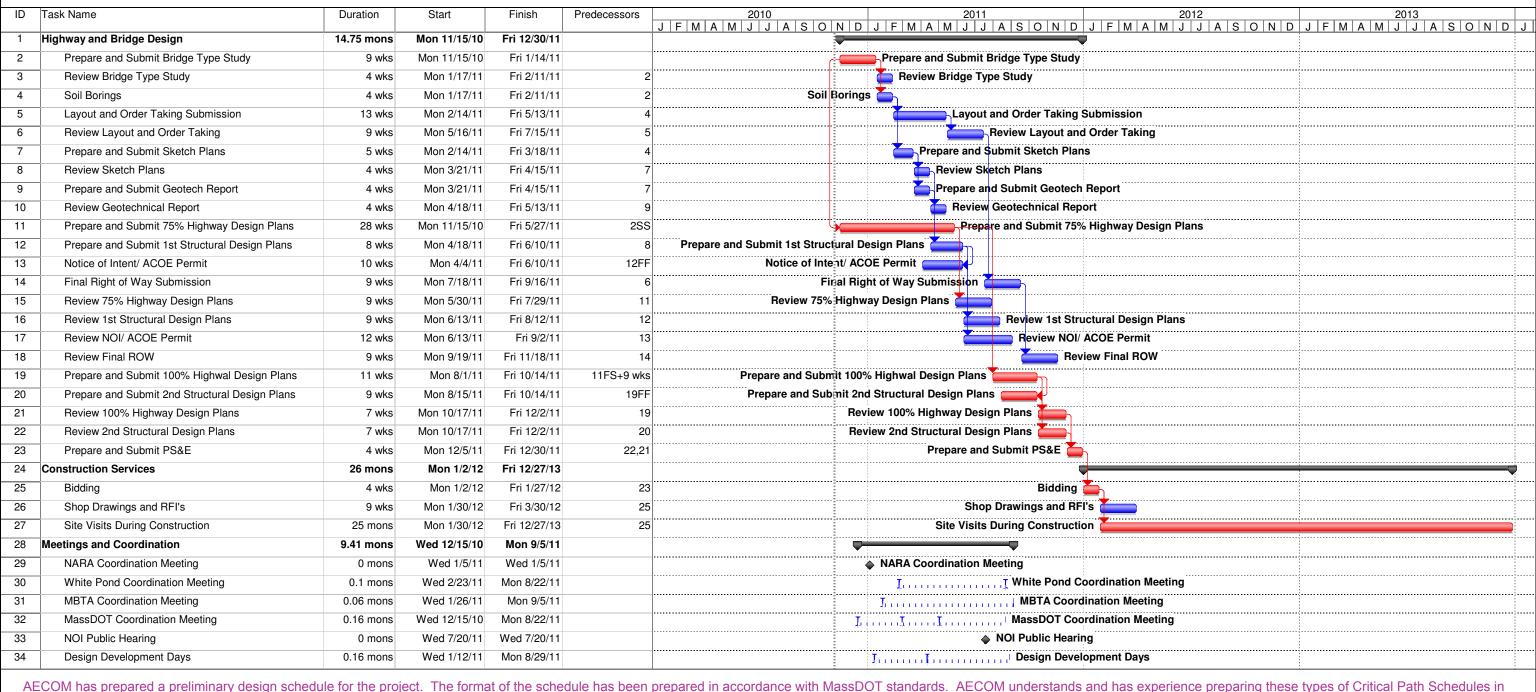


Town of Acton, Massachusetts Town of Concord, Massachusetts Consultant PM: Paul Carter, AECOM, 978-371-4372

BRUCE FREEMAN RAIL TRAIL, PHASE 2A AND 2C, CONCORD AND ACTON, MASSACHUSETTS

TYPICAL SCHEDULE (w/MILESTONES)





AECOM has prepared a preliminary design schedule for the project. The format of the schedule has been prepared in accordance with MassDOT standards. AECOM understands and has experience preparing these types of Critical Path Schedules in Microsoft Project, as required on MassDOT projects. MassDOT is moving towards requiring these types of schedules on all projects. AECOM staff recently attended a workshop offered by MassDOT on project schedule requirements and was one of the first consulting firms to begin using these types of critical path schedules on all design projects for MassReview. Any schedule is only as good as the information input. AECOM reviews project schedules, at a minimum, on a monthly basis, and sometimes sooned. The benefit of this type of schedule is the "logic" that is built in. Each item can be linked to other items so if one item's start or finish date is altered, the rest of the schedule is adjusted accordingly. Also, the critical path is highlighted in red on the printout so that these tasks are given greater focus at each schedule review.

	Project: BFRT Concord Acton Schedule Date: Fri 11/5/10	Critical		Progress		Project Summary		Task			
		Critical Split		Milestone	•	Rolled Up Critical		Split			
		Task		Slippage		Rolled Up Critical Sp	lit	Progress	♦		
		Split		Summary		Critical Split	\Diamond	Milestone	仑		
	Page 1										





Section 2: Project Team Qualifications

Team Organization and Resources

AECOM is one of the largest providers of engineering, environmental, and construction management services in Massachusetts and the US. We provide complete services for design, permitting and construction management to industrial, commercial, and government clients. Our projects have won national and regional awards from many industry organizations.

AECOM is able to draw on the talent of nearly 600 professionals in our northeast offices for all aspects of trail, bridge and roadway design, the public process, environmental permitting, utilities, traffic, pedestrian connections and pathways, lighting, landscaping, and overall project aesthetics. With our in-house capabilities and coordination with our team members, AECOM will be able to address in a timely, cost-effective manner, the issues associated with the final design of Phases 2A and 2C of the Bruce Freeman Rail Trail.

For this project, AECOM will be the lead consultant and will be responsible for project management, public facilitations, scheduling, civil and structural design, horizontal and vertical alignment, storm drainage, traffic, signage, pavement markings, specifications, construction cost estimating and permitting services. Brown, Richardson and Rowe will provide Landscape Architecture services. Green International will provide civil and structural design support and right-of-way services. Lamson Engineering will provide geotechnical services.

AECOM has worked with all these firms in the past and is currently working together on other projects. We know each other well; we correspond almost daily on the projects we are involved in and we have teamed successfully on projects where the MassDOT design process was required.

Also of note is that AECOM's office where the project will be managed from is located in Concord MA. AECOM is also the prime consultant with MassDOT for Segment 2B and was informed by MassDOT that our contract will be amended for AECOM to advance Segment 2B of the BFRT through construction services as part of our Route 2 Rotary contract.

Our depth of staff allows us to put a "Separate Design Team" of professionals on each of the three segments of the BFRT in order to meet or even accelerate schedule and take advantage of construction funding as it becomes available.

Project Organization Chart

An organization chart of the project team is provided on the following page. Resumes for the individuals identified in the organization chart are also provided in this section. Nick Rubino will be the Project Manager for this project and overall Program Manager for the BFRT. Mr. Rubino is the Program Manager at AECOM for all work that is directly with MassDOT. He sits on the ACEC liaison committee with MassDOT and meets on a monthly basis with the Chief Engineer and Administrator to review and discuss ways to streamline the project development process in Massachusetts. Mr. Rubino has been the project manager on numerous rail trail projects and MassDOT projects. He is very familiar with the MassDOT design process.

As indicated in the organization chart, the AECOM team has the resources available to provide separate design teams for each segment and meet or exceed the schedule requirements of the Bruce Freeman Rail Trail.

Key Personnel Resumes

Resumes for AECOM's key personnel and our subconsultants follow the project organization chart.

**MBE/WBE Firms

Civil, Structural, Right-of-Way

SUPPORT SERVICES

Brown, Richardson & Rowe** Landscape/Amenities

Green International**

Geotechnical

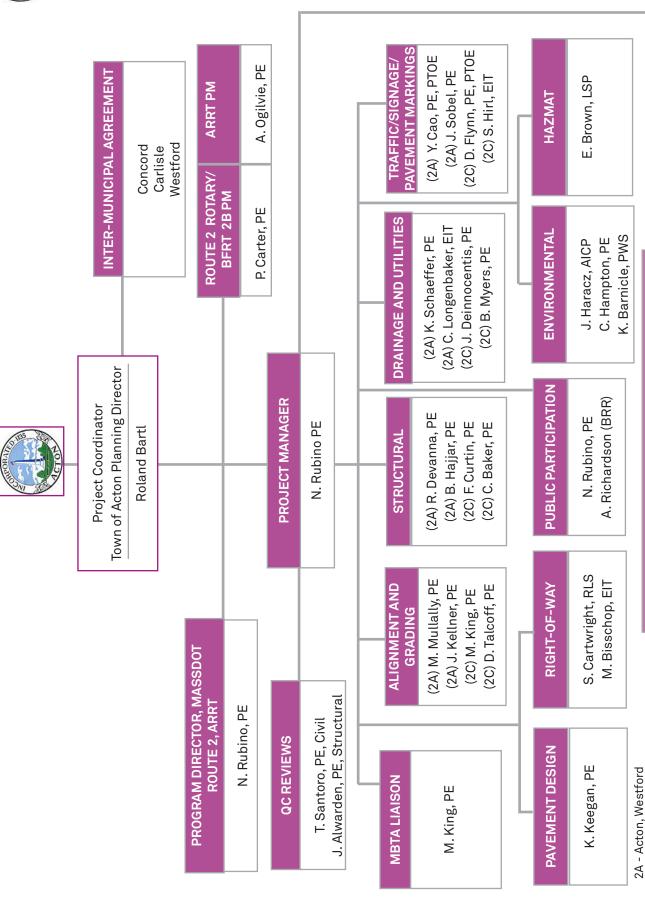
Lamson Engineering**

nearly 50 other relevant professionals in

MA for this project.

responsibilities for the two rail trail segments. The leaders will draw from





(2A) and (2C) indicates the lead design

2C - Concord, Carlisle



Nicholas Rubino, PE

Program Director/Project Manager

Mr. Rubino has 30 years of civil engineering, permitting, design, and construction experience on a wide variety of projects. His work includes many bike path master planning and design projects, as well as urban, rural, and interstate highways; traffic mitigation designs; storm and sanitary sewers; bridge design/ratings; site constraints mapping; residential, commercial and industrial site developments; waterfront developments; environmental, technical and economic feasibility studies; expert testimony; and urban redevelopment projects.

Mr. Rubino has extensive experience in contract administration, QA/QC, coordination of multiple project team members and disciplines, agency liaison, and project funding. Mr. Rubino oversees the planning, setup, permitting, technical/constructability reviews, and overall QA/QC for various civil engineering projects. Mr. Rubino coordinates planners, engineers, surveyors, landscape architects, traffic designers, electrical engineers, structural engineers, utility engineers, computer-aided design operators, and subconsultants. Mr. Rubino is responsible for agency liaison including coordinating federal, state and local design review boards; presentations and negotiations with local historical, conservation, and planning boards; and coordination of various utility companies. Mr. Rubino is a member of the ACEC sub committee that meets with MassDOT on a monthly basis to review issues, and work on ways to streamline the design process.

Assabet River Rail Trail Implementation Plan, Marlborough, Hudson, Stow, Maynard, and Acton, Massachusetts. Original Project manager for the original Implementation Plan for this 12.5-mile "rails to trails" project which crosses the Assabet River five times and is designed for cyclists, wheelchairs, pedestrians, roller-bladers, and cross-country skiers as a 12-foot wide paved path. Plan included right-of-way, hazardous materials, ROW, wetlands, and other issues as well as cost estimates and other information to support grant applications.

Assabet River Rail Trail Final Design Phase I, Hudson and Marlborough, Massachusetts. Project manager for the design and construction services for the first 4-mile section connecting the two downtown areas. Design considerations include signage and pavement texturing at roadway crossings, maintenance of historic railroad features, and landscaping at the entrances and along the trail. A new grade separation between

Education

BS, Civil Engineering, Northeastern University, 1979

Registration

Professional Engineer, Massachusetts, #32629 Professional Engineer, Pennsylvania, #PE-056430-E Professional Engineer, Vermont, #6450 Professional Engineer, New Jersey, #36544 Professional Engineer, Maine, #7157 Professional Engineer, Connecticut, #17352 Professional Engineer, New Hampshire, #6386 Professional Engineer, Rhode Island, #4740

Years of Experience: 30

the trail and the Route 85 connector, as well as a new deck on a historic railroad trestle, are included. Construction was completed in 2006.

Assabet River Rail Trail Preliminary Design, Maynard, Massachusetts. Project manager for coordination and design of a one-mile section of bike path from the Stow Town Line to Downtown Maynard. Includes connections to the National Wildlife Refuge, downtown Maynard, and Ice House Pond.

Assabet River Rail Trail Final Design Phase II, Maynard and Acton Massachusetts. Program Director for the design and construction services for the Maynard and Acton segment. Initial 10% design was completed to gain Federal Funding. Project is currently advancing to final design. Segment starts at Stow Town Line and connects to the South Acton MBTA Commuter Rail Station. Extensive efforts were included to resolve design issues with MassDOT District 3.

MassDOT, Bike Path, Route 146/Massachusetts Turnpike, Worcester, Massachusetts. Project engineer for the preliminary design of a 5-mile bike path design as part of the new interchange between Route 146 at the Massachusetts Turnpike.

MassDOT Route 2 Concord Rotary Interchange, Concord, Massachusetts. Program Director for the environmental permitting and 25% design for the reconstruction and removal of the Concord Rotary, which includes environmental constraints such as a wild and scenic river designation, proposed wildlife crossings, historic sites and farmland, and a cemetery. Provided coordi-



Nicholas Rubino, PE

nation with abutters including a state prison, a Mass-DOT Maintenance Depot, a State Police Barracks, local officials, and businesses. The interchange was developed from three alternatives and included an overpass, bike and pedestrian connections, and minimization of environmental impact.

City of Lowell, Concord River Greenway, Lowell, Massachusetts. Project manager for detailed civil and structural engineering, survey base mapping, right of way planning and acquisition, landscape architecture, and environmental permitting for a 4.8-mile recreational trail to connect downtown Lowell with the Bruce Freeman Trail, and the larger regional Bay Circuit Trail.

Lowell Parks and Conservation Trust, Concord River Neighborhood Trail, Lowell, Massachusetts. Project manager for conceptual design, permitting, final design, and construction phase services related to a 1.5-mile multi-use trail from Lawrence Street to East Merrimack Street, along the banks of the Concord River.

MassDOT, Bourne-Sagamore Rotary Route 3/Route 6 Grade Separation, Bourne, Massachusetts. Project manager for the design of pedestrian and bicycle access, circulation and amenities as part of this gateway project at a five-legged rotary. The pedestrian and bicycle limits include 1,000 meters along Route 6; 1,000 meters along local roadways; 700 meters of relocated Church Lane; connections to a new visitors center; the Cape Cod Canal trail, and local business and residential neighborhoods.

Town of Barnstable, Route 132, Barnstable and Hyannis, Massachusetts. Project manager for reconstruction of a portion of the Route 132 corridor, including provisions for pedestrians and bicyclists to safely share the corridor along meandering, separated walks and bike paths.

MassDOT, On-Call Technical Support, Statewide, Massachusetts. Under Mr. Rubino's direction under the on call AECOM was the first consultant to assist DOT with Peer Reviews of other consultants PS&E submittals. AECOM has reviewed over 35 projects to date and saved DOT millions dollars in construction claims.

MassDOT, I-93 New Interchange at Lowell Junction and Add-a-Lane, Andover. Tewksbury, Wilmington, Massachusetts. Project manager for EIS/EIR environmental

permitting and 75% design for a new interchange on I-93 as well as adding a lane on I-93 in the Wilmington, Andover, Tewksbury area. This project will relieve traffic congestion and open up one million square feet of new economic development.

Town of Concord, Municipal Light Plant Site Design, Concord, Massachusetts. Project manager for the permitting and site design services of a six-acre site design at the intersection of Routes 2 and 2A. To access the upland an access roadway was designed, permitted and constructed across the narrowest portion of wetlands. Oversaw all aspects of the site design including grading, septic system, storm drainage, site utilities, parking and circulation layout, landscaping, site amenities, and a vehicle refueling station.

MassDOT, I-95 Canton Interchange Evaluation, Canton and Dedham, Massachusetts. Project manager for the new Dedham Street Interchange as part of the overall interchange design. Also responsible for the review of the ramp justification from the enhanced environmental notification form submitted by the developer of the Westwood station project. Managing review of traffic operations of the ramp with Dedham Street, length of the ramp, potential implications of ramp operations on I-95 northbound traffic flow, right-of-way impacts, conformance with MassDOT design requirements, and potential implications of an assumed one-lane exit ramp on the eventual design of the Dedham Street bridge.

City of Salem, Canal Street Improvements Plan, Salem, Massachusetts. Project manager for collecting initial data, conducting a traffic analysis, and preparing a project narrative describing the proposed improvements and constraints to MassDOT and the Metropolitan Planning Organization for inclusion on the TIP for 1.25 miles of Canal Street corridor from the Washington Street traffic signal to the traffic signal at Loring Avenue.

Town of Yarmouth, Station Avenue, Yarmouth, Massachusetts. Project manager for the reconstruction of two signalized intersections along a section of Station Avenue. Station Avenue is a minor arterial with three distinct sections: a heavy commercial area, a residential and extended school zone, and a historic district.



Andrew Ogilvie, PE

ARRT Project Manager

Mr. Ogilvie has 15 years of design experience in transportation, specializing in highway design and stormwater management systems. He has been involved with the design of numerous highway projects. Mr. Ogilvie has a comprehensive knowledge of Massachusetts Highway Department and AASHTO standards. He has prepared hydrologic and hydraulic reports for both municipal projects and regional studies. He has an extensive knowledge of AutoCAD, Softdesk Land Development Desktop, HydroCAD, StormCAD, TR-55, CulvertMaster, and HY-8.

Town of Acton, Assabet River Rail Trail Conversion Design, Acton and Maynard, Massachusetts. Project manager for permitting, design, and construction services for a 3.45-mile 12-foot-wide section of a proposed rails-to-trails conversion. Design includes placement of signage, as well as design of roadway and river crossings.

City of Lowell, Concord River Greenway, Lowell, Massachusetts. Project Manager for detailed civil and structural engineering, survey base mapping, right of way planning and acquisition, landscape architecture, and environmental permitting for a 4.8-mile recreational trail to connect downtown Lowell with the Bruce Freeman Trail, and the larger regional Bay Circuit Trail

Town of Waltham, Wayside Rail Trail, Waltham Massachusetts. Project manager for the conceptual design of 3.2 miles of bike path using an existing railroad bed as a multi-use recreational facility. Prepared conceptual plans for the city's use in obtaining enhancement funding for the project. Coordinated staff efforts in assessing traffic conditions at proposed intersection crossings and structural review of two existing bridges. Prepared plans detailing right-of-way issues for the city's use in obtaining the property rights from the Massachusetts Bay Transit Authority.

National Park Service, Fall Overlook Greenway, Lowell, Massachusetts. Project manager for the planning, environmental permitting, landscape architecture, structural and civil engineering and related services involved in the design of improvements consisting of a public walk and greenway along the north bank of the Merrimack River. Prepared the conceptual, preliminary and final design on the walkway. Overseeing the production of alignment, grading and structural plans and estimates. Coordinated the work of the landscape architect in the design of the landscape areas, identi-

Education

BS, Civil Engineering, Lehigh University, 1994

Registration

Professional Engineer, Massachusetts, #41342

Years of Experience: 15

fication of features such as handrails, benches, bike racks, plantings, pedestrian lighting and one wayside area for viewing the existing falls. Oversaw the work of a structural engineer in the design of two pedestrian bridges.

National Park Service, Upper Pawtucket Canal Walk, Lowell, Massachusetts. Project manager for the planning, environmental permitting, landscape architecture, structural and civil engineering and related services involved in the design of improvements consisting of a public walk along the south bank of the canal. Prepared the conceptual, preliminary and final design of the walkway. Overseeing the production of alignment, grading and drainage plans and estimates. Coordinated the work of the landscape architect in the design of landscape areas and identification of features such as handrails, benches, bike racks and plantings, pedestrian lighting.

Massachusetts Highway Department, Route 132 Landscape Review, Barnstable, Massachusetts. Project manager for review of the landscape improvements design along the Route 132 highway corridor. Managing evaluation of the plans and cost estimate produced by the landscape architect for conformance to Massachusetts Highway Department standards for a 25% submission.

Town of Barnstable, Route 132 Construction Services, Barnstable, Massachusetts. Project engineer for construction services for a 2-mile roadway improvement project. Conducting the bimonthly on-site construction meeting, monthly site visits, shop drawing reviews, interpretations and clarifications of the contract documents, and as-needed construction engineering services.

Massachusetts Highway Department, I-495 Bridge Bundle Design-Build, Lowell, Massachusetts. Lead engineer for highway and civil design tasks. Oversaw the production of highway design plans, traffic management plans and related permits. Coordinated the work between multiple design disciplines and the contrac-



Andrew Ogilvie, PE

tor. Worked with both the Massachusetts DOT and the Contractor to prepare design plans for early construction prior to final design approval.

Town of Templeton Massachusetts, Baldwinville Road Reconstruction, Templeton, Massachusetts. Project manager for the reconstruction of a 3.1-mile arterial connecting the town center with Route 2 and the village of Baldwinville. The design includes areas of pavement reclamation and proposes to add a sidewalk along one side of the roadway. The project is progressing through the MassDOT design process and is scheduled for construction in 2011.

Rockport Chamber Music Festival, Construction Services, Rockport, Massachusetts. Project manager for construction services for a building to house the Rockport Chamber Music group. Managing shop drawing reviews, on-call site inspection services, response to contractor questions, clarification on design issues that come up during construction, civil and site construction administration, and landscape architecture construction administration.

City of Cambridge, Flagstaff Park and Cambridge

Common Improvements, Cambridge, Massachusetts. Project manager for the design of a multi-use path through Flagstaff Park and the reconstruction of the existing pathways within Cambridge Common. The project involves the modification of the existing traffic signals at Massachusetts Avenue at Cambridge Street and Massachusetts Avenue at Garden Street. The intersections will be modified to include an improved pedestrian and bicycle access to the Cambridge Common and also improve traffic flow in this congested area. The park areas will be rehabilitated and extensive landscape architecture work is being done to revitalize the park areas.

City of Holyoke, Ingleside Traffic Study, Holyoke, Massachusetts. Project manager for a regional traffic analysis in the Ingleside neighborhood, which is a very congested area with retail, office, and industrial uses. The area is bisected by I-91 and commuter traffic to and from this route poses a great impact to the community. Managing evaluation of the current traffic conditions, preparation of an existing conditions analysis for the city, and recommendations on improvements the city can implement in the long and short term to provide relief to neighboring residents. Managing preparation of an analysis of future site conditions by analyzing the available land areas within the region and assigning projected traffic volumes to these potential developments.

City of Cambridge, Citywide Traffic Calming, Cambridge, Massachusetts. Project engineer for on-call contract to regulate traffic operations on city roadways, with particular emphasis on reducing speeds on neighborhood streets. Coordinated design efforts and prepared construction estimates and bid documents for multiple locations. Designed innovative features such as chicanes, raised devices, curb extensions, and median slow-points. Worked in coordination with all major city departments, and with other city infrastructure projects.

Massachusetts Port Authority, Traffic Management and Roadway Improvements, South Boston, Massachusetts. Project engineer responsible for design of traffic management and pedestrian enhancements for Seaport Boulevard, B Street, and Congress in the Seaport District of South Boston. Designed improvements to Seaport Boulevard including a raised median and a raised crosswalk. Oversaw the design of traffic and streetscape improvements and integrated these elements into the overall design package. Prepared special provisions, contract documents and final construction estimate.

City of Cambridge, Porter Square Improvements, Cambridge, Massachusetts. Project engineer responsible for coordinating design elements for a multifaceted engineering project that included the realignment and reconstruction of an urban signalized intersection, the design of a pedestrian plaza as well as sewer and drainage improvements. Prepared grading plans and construction details. Assisted the project manager in coordination between various public agencies and utilities. Reviewed shop drawings and answered contractor questions throughout the construction phase.

Town of Dedham Planning Board, Peer Review, Dedham, Massachusetts. Provided on-call peer review of engineering plans. Reviewed design plans for conformance with town stormwater standards and for compliance with Massachusetts DEP stormwater standards. Assisted the Conservation Commission in reviewing notice of intent plans. Prepared reports on noncompliance issues.

North Andover Planning Board, Plan Review, North Andover, Massachusetts. Provided on-call peer review of engineering plans. Town engineer to review all permit applications. Reviewed watershed special permits, site plans, subdivision plans, and Chapter 40 B special permits. Evaluated drainage design for compliance with Massachusetts DEP stormwater standards. Prepared reports on noncompliant issues.



Paul Carter, PE

Route 2 Rotary/BFRT 2B Project Manager

Mr. Carter is a project manager with experience in highway, site development and municipal engineering. He is skilled in securing federal, state, and local regulatory approvals. His experience includes roadway and site design, hydrologic and hydraulic analysis, environmental permitting, scheduling, budgeting and construction inspection. He is also experienced in managing projects from feasibility analysis and conceptual design through final design and construction documents.

Town of Acton, Assabet River Rail Trail Conversion Design, Acton and Maynard, Massachusetts. Project engineer for environmental permitting, conceptual, preliminary and final design, and construction services for a 3.45-mile 12-foot-wide section of a proposed rails-to-trails conversion. Design includes placement of signage, as well as design of roadway and river crossings, coordination with the towns and abutters for right-of-way easements.

Massachusetts Highway Department, Route 2 Reconstruction at Concord Rotary, Concord, Massachusetts. Project engineer for environmental permitting and 25% design for reconstruction and removal of the rotary on Route 2. Project includes environmental constraints such as a wild and scenic river designation, proposed wildlife crossings, historic sites and farmland, and a cemetery. Provided coordination with abutters including a state prison, a MassDOT Maintenance Depot, a State Police Barracks, local officials, and businesses. The interchange was developed from three alternatives and included an overpass, bike and pedestrian connections, and minimization of environmental impact.

City of Salem, Canal Street Improvements Plan, Salem, Massachusetts. Project manager for collecting initial data, conducting traffic analysis, preparing a project narrative describing the proposed improvements and constraints to MassDOT and the Metropolitan Planning Organization to obtain PRC approval and inclusion on the TIP, preparing the conceptual 25% design, and preliminary right-of-way plans for 1.25 miles of Canal Street corridor from the Washington Street traffic signal to the traffic signal at Loring Avenue.

MassDOT, I-95 Canton Interchange Evaluation, Canton and Dedham, Massachusetts. Senior project engineer for the new Dedham Street interchange as part of the overall interchange design. Also responsible for review of the ramp justification from the enhanced environmental notification form submitted by the developer of the Westwood Station project. Coordinating review

Education

BS, Civil Engineering, University of Massachusetts, 1983

Registration

Professional Engineer, Massachusetts, #34346

Years of Experience: 26

of traffic operations of the ramp with Dedham Street, length of the ramp, potential implications of ramp operations on I-95 northbound traffic flow, right-of-way impacts, conformance with MassDOT design requirements, and potential implications of an assumed two-lane exit ramp on the eventual design of the Dedham Street bridge.

Route 140 Relocation and I-495 Interchange Improvements, Franklin, Massachusetts. Project manager for the relocation and widening of 2 miles of Route 140 including roadway, bridge and traffic control improvements to the Route 140/I-495 interchange. The project includes design of a new four lane divided roadway, a new 570 foot long three span bridge over the CSX railroad and Mine Brook, design of a new six lane I-495 overpass structure, interchange ramp widening and five new signalized intersections. Environmental permitting included preparation of a EA/EIR, Section 4f and 106, Wetlands Variance, ACOE, NPDES permits and the design of three wetland mitigation areas totaling over 1.7 acres and a 380 foot long section of relocated stream. Stormwater management included the design of 1.5 miles of storm drain, four extended detention and water quality basins, water quality swales and a sediment chamber.

South and North Main Street (Route 27) Sharon, Massachusetts. Project manager for the design of roadway, traffic control and streetscape improvements to a five mile portion of Main Street from Laurel Road to Cobbs Corner. Roadway improvements include reconstruction of the existing pavement and sidewalks, installation of granite curbing, and minor drainage improvements. Intersection improvements include upgrading two existing traffic signals, adding two new traffic signals, upgrading handicap ramps and improving curb radii for vehicle turning movements. A detailed traffic, parking and pedestrian study was conducted in the town center to identify possible traffic circulation improvements, on- and off-street parking needs and pedes-



Paul Carter, PE

trian safety improvements. Landscaping and lighting design of proposed streetscape improvements in the town center includes brick sidewalks, street trees, ornamental lighting, benches, gateway signage and precast concrete pavers with granite edged crosswalks.

Great Plain Avenue (Route 135), Needham, Massachusetts. Project manager for the rehabilitation of 1.7 miles of Route 135 from the Wellesley town line to the Linden Street. The roadway rehabilitation includes full-depth pavement reclamation, replacement of existing deteriorated bituminous curbing and sidewalks and vertical granite curbing and concrete sidewalks, construction of wheel and vertical granite curbing and concrete sidewalks, construction of wheel chair ramps at all intersections, replacement of existing cable and wood guardrail with steel beam guardrail, and minor drainage system modifications. The project also includes improvements to the existing signalized intersection of Great Plain Avenue with Central Avenue.

Andover Street (Route 133), Tewksbury, Massachusetts. Project manager for the rehabilitation of 2.4 miles of Route 133 (Andover Street) from the Lowell town line to the Andover town line. The roadway rehabilitation includes cold planing and overlaying the existing pavement, minor widening to obtain a uniform 32-foot road width, construction of a five-foot wide bituminous sidewalk along one side, installation of vertical granite curb and bituminous berm, guard rail replacement, minor drainage modifications, signing and pavement markings. The project also includes traffic signal improvements and box widening of 1700 feet of Andover Street from two lanes to three lanes to provide a left turn lane.

Reed Road, Dartmouth, Massachusetts. Project manager for the rehabilitation of 1.2 miles of Reed Road from Route 6 to I-195. The roadway rehabilitation includes full depth pavement reclamation, re-alignment of approximately 500 feet of roadway to eliminate a hazardous curve and box widening to provide for addition of four-foot shoulders on both sides with bituminous berm. Project also includes installation of a new closed drainage system and replacement of four major cross culverts of Lake Noquochoke.

Salem Turnpike (Route 114) North Andover, Massachusetts. Project manager for roadway and traffic control improvements to the intersection of Route 114 with Willow Street and Mill Road including the widening of Route 114 to a 5-lane section, addition of left-turn lanes on side streets, and installation of traffic signals.

Massachusetts Highway Department, Roadway Rehabilitation, Ayer, Massachusetts. Project manager for the rehabilitation of East Main Street (Route 2A/Route 111), Park Street (Route 2A/Route 111), and Groton School Road (Route 111), a total distance of 2.5 miles under the MassDOT state numbered route paving program. The project included full depth pavement reclamation downtown and cold planing and overlay north and east of downtown, as well as, a new five-foot sidewalk with vertical granite curb and drainage modifications for Park Street to improve pedestrian safety. Design efforts include field survey, pavement testing and design, highway design, traffic signal design, and preparation of environmental permit applications.

Central Artery Utilities Relocation, Boston, Massachusetts. Project engineer responsible for the development of stage construction plans under two separate construction contracts including temporary roadways, regional and local detours, modifications to traffic signals, temporary traffic control devices, signing and pavement markings for each major phase. Responsibilities included formal presentations to abutters and business leaders, intensive participation in design workshops with the Massachusetts Highway Department and Boston Transportation Department, and detailed coordination with the project's management consultant and designers for adjacent contracts.

Route 163 and Route 277, Ashland, Maine. Project manager for the reconstruction of three miles of highway including major drainage and utility improvements. Preliminary design of the combined underdrain/stormwater system included identification of alternative discharge points and feasibility analysis of infiltrative drainage alternatives.

Route 4, Sandy River, Avon, Maine. Project manager for the reconstruction of three miles of Route 4 adjacent to the Sandy River, including alternative alignment, bridge and river erosion studies, wetland and right-of-way coordination. Responsible for the hydrologic analysis and hydraulic design of over forty cross-culverts, two single span bridges, and countermeasures for riverbank erosion using the "New England Hill and Lowland Adirondack White Mountain and Maine Woods" (NEHL-AWM), Kinnison-Colby, USGS "Wandle Method" and Rational Method for peak flow development. Culvert analysis conducted in accordance with HEC 5 using the Dodson computer program.



Antonio Santoro, PE

Quality Control Reviews, Civil

Mr. Santoro is AECOM's Concord Office Quality Management System Manager and a transportation engineer with experience on a variety of transportation and site design projects for municipal, state, and federal clients. As project manager of MassDOT statewide contracts, he oversees a variety of transportation assignments, including the peer review of MassDOT PS&E design packages for compliance with the latest directives and design procedures. As civil project engineer for multiple bridge replacement projects, Mr. Santoro oversees the civil design and coordination between the various disciples. As construction phase support, he reviews contractor questions and develops solutions in support of contractor schedules, Mr. Santoro also serves as the Concord office Transportation group quality assurance manager, implementing AECOM's quality control program prior to each project submittal. Within the various disciplines in the group, Mr. Santoro coordinates staff resources and compliance with company procedures.

MassDOT, On-Call PS&E Review Services, Statewide, Massachusetts. Oversees the review of MassDOT PS&E construction packages produced by other consultants, in support of MassDOT Construction Contract Division. As project engineer, coordinates reviews of various engineering disciplines and prepares the written responses to the client. Serves as primary contact with MassDOT for these services, ensuring thorough and timely reviews in support of contract bid schedules.

MassDOT, Accelerated "Footprint" Bridge Program, Multiple Sites. Civil project engineer of multiple footprint bridge replacement projects, which typically involve civil plan and profile for the approaching roadways to both the temporary and permanent structures. Roadway reconstructions can include roadway cold planning, full depth pavement, reconstructed sidewalks, and drainage improvements.

Town of Northbridge, Sutton Street Reconstruction, Northbridge, Massachusetts. Project engineer for reconstruction design of a two-mile section of Sutton Street. Utility reconstruction included water, sewer, and drainage improvements. Roadway reconstruction included cold planing with pavement overlay, full depth pavement, reconstructed sidewalks, and wheelchair ramps which comply with the Americans with Disabilities Act.

Education

BS, Civil Engineering, University of Massachusetts, Lowell, 1992

Registration

Professional Engineer, Massachusetts, #40168 Certified Soil Evaluator, Massachusetts, #3016

Years of Experience: 18

Various Privately Funded Residential and Small Commercial Developments, Central Massachusetts. Designed a variety of residential and small commercial developments typically seen in local cities and towns. Design work included site grading, utilities, and stormwater modeling. Work also included residential Title V septic design.

MassDOT, Central Artery Tunnel (D008A), Boston, Massachusetts. Construction coordinator for the design team, involved with all aspects of construction phase services for a \$150 million highway interchange. Work included responding to contractor questions and coordinating the responses of the various subconsultants on the design team. Prior to start of construction, designed the horizontal and vertical alignments for this complex system of viaducts and embankments connecting IH 90, Route 1A, and the Logan International Airport access roads.

Massachusetts Port Authority, Logan International Airport Roadway Reconstruction, Boston, Massachusetts. As Massport construction representative, reviewed construction documents identifying conflicts between the various projects and ensuring compliance with Massport specifications. This coordination role minimized construction delays while maintaining a safe environment for the public traveling through the airport.



Joseph Allwarden, PE

Quality Control Reviews, Structural

Mr. Allwarden has over 20 years of experience designing and managing bridge and structural projects. He has experience with design, oversight and management of projects of varying size and complexity ranging from small culvert replacements to large multi-span truss bridges over major rivers. Responsibilities for projects have included project management, design, inspections, load ratings, and construction phase services. His most recent responsibilities have included the management of multiple projects throughout Massachusetts, New Hampshire, Maine and Rhode Island. He is also responsible for proposal preparation and client contact.

Bridge No. H-24-012, Route 62 over West Branch, Ware River, Hubbardston, MA (MassDOT). Project Manager responsible for managing the design of a replacement bridge for a deteriorated twin plate-arch structure as part of the footprint bridge program. Endangered plant and animal species, beaver activity and maintaining one lane of traffic and adequate stream flow during construction all had to be considered in the bridge type selection. It was determined that the most appropriate structure would be butted precast concrete deck beams on pile supported integral abutments.

Bridge No. S-25-006, Route 62 (Princeton Road) over Stillwater River, Sterling, MA (MHD). Project Manager for the replacement design of this bridge which is on the Year 1 list as part of the Accelerated Bridge Program. Responsible for bringing the design from a 25% completion level to advertising in accelerated fashion. The replacement structure will be a spread box beam superstructure with composite concrete deck, on pile supported integral abutments. The existing abutments will be retained as scour protection.

Route 9 over the Sudbury River (F-07-006(9BH)), Framingham, MA (MHD). Project Manager for the final completion of plans, specifications and estimate for this bridge replacement project. The existing steel girder and floor beam bridge is to be replaced with a steel plate girder integral abutment bridge. The proposed integral abutments are to be constructed behind the existing gravity abutments to minimize cofferdams during construction. Challenges included maintenance of the high volume of traffic on Route 9 during construction. The use of temporary support girders and a three stage construction sequence was utilized.

Pelham Island Road over the Sudbury River (W-11-002 (8XF)), Wayland, MA (MHD). Project Manager for the final completion of plans, specifications and estimate

Education

MS, Civil Engineering (Structures), University of Maine, Orono, ME, 1987

BS, Civil Engineering, University of Maine, Orono, ME, 1986

Registration

PE, ME

PE, MA, # 48021 PE, NH, # 8873 PE, NJ, # 24GE04477100

Years of Experience: 26

for this bridge replacement project. The existing deteriorated concrete arch structure is to be replaced with a pile supported custom precast concrete arch. Because the arch geometry does not fit "standard" arch profiles, a custom arch was designed and detailed. The arch was detailed so that it can be precast in sections and set on cast-in-place pile caps. Other features include architectural exposed aggregate concrete spandrel walls and wingwalls as well as decorative concrete bridge rail.

Interstate 91 Weave Elimination, MassDOT, Springfield, MA. Project Engineer for structural calculations relating to RFIs for floor beam extensions and steel erection sequences for this bridge widening and rehabilitation project. As a rehabilitation project, this required extensive research into the existing plans and consideration of erection sequences and construction methods.

Calvin Coolidge Memorial Bridge Rehabilitation, Hadley-North Hampton, MA. Senior Bridge Engineer responsible for analysis and design of the rehabilitation of the approach structures for this steel truss bridge over the Connecticut River. Duties included analysis of existing approach span bents, design of precast concrete replacement superstructure, and design of bent extensions to widen the existing approach structure. During construction, also responsible for field inspections with the contractor to determine extent of necessary repairs.

I-93 Viaduct and Ramps North of the Charles River, Boston, MA (CAT Contract C19B1). Senior Bridge Engineer for this project which consists of almost 1,000,000 sq. ft. of single and double decked viaduct being progressed as alternate designs of steel trapezoidal box and segmental concrete superstructure.



Mark King, PE

MBTA Liaison and Alignment and Grading (2C)

Mr. King has over 20 years of experience in civil transportation and civil site engineering. His experience includes civil highway and roadway design, major utility design, railroad design/inspection, stormwater management, and civil site design. Mr. King also has experience in project administration, construction management, and estimating of various civil projects.

Route 128 Intermodal Facility, Massachusetts Bay Transportation Authority (MBTA)/Amtrak, Westwood/ Dedham, Massachusetts: As the project engineer, Mr. King was responsible for the preliminary design of the stormwater management system to comply with DEP regulations for the proposed Dedham Street on-ramp to I-95 south. This ramp was included in the final environmental impact report for this new intermodal facility in a cooperative effort between the MBTA and the MassDOT to facilitate regional transportation improvements.

Massachusetts Bay Transportation Authority (MBTA), Blue Line and Red Line Station Rehabilitations. Boston, MA. Projects consisted of the rehabilitation of 5 subway stations. The civil portions of the scope included the design of busways, utilities, parking lots, local roadways and stormwater management systems. As Lead Civil Engineer, responsible for all facets of the civil design, coordination with public agencies and utility companies and construction phase services.

South Boston Piers Transitway, Massachusetts Bay Transportation Authority (MBTA), Boston, Massachusetts: Project engineer for this new underground mass transit system connecting existing lines to future South Boston development. This \$480 million project included 1.6 miles of tunnel with ancillary facilities, reconstruction of the South Station Red Line Station to accept an additional platform; construction of a new World Trade Center station; and coordination with concurrent projects, including the Central Artery/Tunnel project and the Massport World Trade Center Development. Mr. King was responsible for utility design/relocation, cost estimating, and overall coordination of civil/utility design.

Massachusetts Bay Transportation Authority (MBTA), Newburyport Commuter Rail Restoration Project, Newburyport, Massachusetts: Project consisted of the design of nine miles of commuter railroad with two passenger stations and a layover facility along an existing railroad right-of-way through tidal wetlands and residential neighborhoods. Project also consisted

Education

BS, Civil Engineering Marquette University, Milwaukee, WI, 1989

Registration

Professional Engineer, Massachusetts, #47815

Years of Experience: 20

of the design of tidal culverts, a number of at-grade railroad crossings, and four railroad bridges. As Civil Engineer, responsible for civil design of the grade crossings, passenger station access roads and parking lots, drainage and stormwater treatment systems, and general project coordination and administration. Prepared and coordinated all Federal, State, and local permits required, and managed construction phase services for project.

City of New Bedford, Route 18/JFK Highway Access Improvement Project, New, Bedford, MA. Project consists of the redesign of the existing urban arterial Route 18 in New Bedford, MA, including horizontal/vertical geometry, traffic signals, streetscape, bicycle accommodations, both on street and a shared use path, a new bridge, and lighting. The project seeks to improve vehicular and pedestrian access and safety, maintain viable access to industrial areas, and provide an aesthetically pleasing corridor. As Technical Lead, responsible for the development of alternatives and preliminary and final design for all facets of the Project. Also responsible for coordination of all Project/design issues with the various stakeholders, including the City of New Bedford, MassDOT, FHWA, and others.

Massachusetts Highway Department, Exit 6 ½, Route 6, Barnstable, MA. Project consists of the development of alternatives, preliminary design of the preferred alternative and assessment of environmental impacts for a new interchange, Exit 6 ½, connecting Route 6 with the Town of Barnstable, MA. As civil engineer responsible for the alternative layouts, preliminary design and cost estimate of the proposed interchange.

Massachusetts Highway Department, Route 28 over Route 213 Bridge Replacement in Methuen, MA. Lead Civil Engineer responsible for preliminary and final design for Route 28, as well as the utility design. Also responsible for the temporary roadway system as part of the staged construction plans.



Matthew Mullally, PE

Alignment and Grading (2A)

Mr. Mullally is a civil engineer with 12 years of experience in civil engineering and construction, primarily in transportation and related fields for state transportation agencies, municipalities, and commercial clients. His experience includes highway surveying, construction and design, traffic analysis and design, and the construction of environmental remediation and protective structures. He has experience in the preparation of Right-of-Way plans and associated documents for state and federally funded projects. He has acted as a construction supervisor for state agencies and local planning boards providing construction and traffic plan reviews and field inspections. He has worked on geological surveys preparing plan and conducting field inspections of soil and core boring. He has managed projects from the preparation of deficient bridge reports to permitting and design review of \$100 million development projects. Mr. Mullally is familiar with a variety of computer software including AutoCAD, Land Development, and HydroCAD.

MassDOT - Highway Division, Dedham Street, Canton Massachusetts. Civil engineer for drainage design of the bridge replacement and roadway widening of Dedham Street as well as the new improvements to access to I-95 highway. The drainage design involved construction of six drainage basins to minimize impacts to surround property and conservation land.

Massachusetts Highway Department, Sagamore Rotary, Bourne, Massachusetts. Civil engineer for conceptual design and preparation of the 75% design submission for the Sagamore Rotary project. This project is designed to improve the flow of traffic from Route 6 on Cape Cod to Route 3 in southeastern Massachusetts. Construction needed to be designed in stages to allow the continued operation of neighboring businesses. The design also included the construction of a replacement fire station for the town of Bourne, and redesign of a commercial area that services a new building for the Chamber of Commerce and a commuter park-andride lot. Work included design assistance and AutoCAD drafting of construction drawing in coordination with work performed by architectural, structural, and landscape sub consultants.

Antares LLC, Yale & Towne and Harbor Point Traffic Engineering, Stamford, Connecticut. Project manager for evaluation of mitigation and off-site improvements for the Yale & Towne and Harbor Point developments with studies, reports and support efforts as requested by client.

Education

BCET, Civil Engineering Technology, Wentworth Institute of Technology, Massachusetts, 2002

HTC, Highways Technology, Holland College, Prince Edward Island, Canada, 1995

Registration

Professional Engineer, Massachusetts, #46890

Years of Experience: 12

University of Connecticut, State Traffic Commission Permitting Conditions Implementation, Storrs, Connecticut. Project manager for implementation of the state traffic permitting conditions developed in earlier studies to eliminate noncompliance with state traffic safety conditions. Managing design of conceptual intersection layouts, finalizing special pavement marking treatments, and assisting the university with selecting materials and installation.

Town of Kingston, On-Call Engineering Services, Kingston, Massachusetts. Project manager for engineering services to the town for design reviews and construction monitoring of development sites presented to the town planning board.

Town of Plainville, On-call Engineering Services, Plainville, Massachusetts. Project manager for on-call engineering services for the Plainville Planning and Zoning Boards. Coordinates design reviews of subdivision or single lot developments in accordance to town rules and regulations and zoning by-laws, schedules preconstruction meetings and provides construction site visits on an expedited basis at the town's request.

MassDOT, On-Call Technical Support, Statewide, Massachusetts. Project engineer for on-call services to MassHighway for design and review services. The first assignment is a small footprint bridge replacement design. The second assignment is to assist MHD with the review of final plans, specifications, and estimates from other consultants prior to advertising for contractor bids.

MassDOT - Highway Division, William H. Dalton Memorial Bridge, US Route 6 over Cohasset Narrows, Bourne and Wareham, Massachusetts. Project engineer for the civil plan, profile and drainage design of approach roadways to the replacement of a 5-span, 240-foot reinforced concrete girder bridge. Project scope includes



Matthew Mullally, PE

traffic management of 35,000 vehicles per day using construction phasing with minimal impacts to adjacent businesses. Two lanes of traffic need to be maintained during stage construction and the construction of a temporary pedestrian walkway. Complexities of the project require minimal impact from construction operations to pedestrian and boat traffic in and around the local marina/restaurant businesses and environmentally sensitive areas of Buttermilk Bay surrounding the project. Work entails preliminary and final design, quantity estimates, and development of construction plans and specifications.

MassDOT – Highway Division, Route 85 Bridge, Hopkinton and Southborough, Massachusetts. Project engineer for the civil design and cost estimating portion of the footprint bridge replacement project of the Route 85 bridge. Existing abutments will remain in place and the top to be removed to accommodate the new superstructure. Traffic management requires four stages of construction and maintain two lanes through construction of the project. Managing plan and profile design of the approach roadways in cooperation with the structural and environmental departments work for a 35-foot bridge crossing over the Sudbury River between the towns of Hopkinton and Southborough, through the Mass Highway Project Development and design guide process.

MassDOT - Highway Division, Kings Bridge, Brimfield and Palmer, Massachusetts. Project engineer for the civil design and cost estimating portion of the footprint bridge replacement project of the Kings Road Bridge. Managing plan and profile design of the approach roadways in cooperation with the structural and environmental departments work for a 140 foot bridge crossing over the Kings River between the towns of Brimfield and Palmer, through the Mass Highway Project Development and Design Guide process.

Town of Templeton, Baldwinville Road Improvements, Templeton, Massachusetts. Project engineer for concept level engineering and cost estimating to help the town advance the proposed improvements to approximately three miles of two-lane highway connecting Templeton Center with Baldwinville. Assisting pavement design, preliminary roadway design, development of conceptual level engineering plans, and construction cost estimating.

Town of Carver, Tremont Street Dam Assessment, Carver, Massachusetts. Project manager for a Phase I assessment of the dam and preparation of a report recommending upgrades for the town and Office of Dam Safety.

Town of Salem, Marlborough Road Improvements, Salem, Massachusetts. Surveyor and designer of a reconstructed retaining wall, which consisted of surveying the location of a built retaining wall on the inside curve of a roadway reconstruction project. Special attention was given to the reconstructed driveway and roadway located at the beginning and end of the curve of the wall to determine safe sight distance at the approaching intersection travel lanes. The survey data was then used to design and create construction drawings for a new retaining wall within the existing construction project.

Massport, Logan Airport Roadway, North Point Park Construction Project, East Boston, Massachusetts. Supervised the construction of new roadway and utility work in and around Logan airport including traffic detours and sequencing of work on I-90 and Route 1 roadways. Monitored and coordinated design change of a new \$10 million park and oversaw the progress and document problems with the \$222 million roadway improvement project.

Town of Hopkinton, South Street Improvement Project, Hopkinton, Massachusetts. Field inspector for construction of 1.3 miles of roadway through a busy industrial zone. Coordinate project close out issues between abutters, town highway and conservation officials and the contractor. The project consisted of box widening sections of roadway through wetland areas, installing a new drainage system including three detention basins, installing a wetland replication area, upgrading and installing utility duct banks, and installing two new traffic light systems. Worked closely with the general contractor, town officials, conservation commission members, and neighboring abutters to resolve problems during construction. Local traffic from neighboring towns and abutters averaged around 15,000 vehicle per day which had to be accommodated during construction.

MassDOT, On-Call Technical Support, Statewide, Massachusetts. Project engineer for on-call services to MassHighway for design and review services. The first assignment is a small footprint bridge replacement design. The second assignment is to assist MHD with the review of final plans, specifications, and estimates from other consultants prior to advertising for contractor bids.



Jeffrey Kellner, PE

Alignment and Grading (2A)

Mr. Kellner has over 10 years of Civil Engineering experience in the design of roadway systems and inspection of tunnels and bridges. He has been an integral member of the design team for several roadway projects in Massachusetts, Maine, New York, Rhode Island and Queensland, Australia. In addition to his roadway design experience he has also been responsible for the preparation of detailed quantity takeoffs and construction cost estimates. He is well versed in the use of AutoCAD Land Development as a roadway design tool for developing roadway layouts, vertical profiles, curb-tie plans and cross sections. He has inspected and prepared reports for numerous bridges and tunnels for the Massachusetts Turnpike Authority, tunnel structures for the MBTA, and bridges for RIDOT.

Acadia Gateway Center, Master Plan and Environmental Assessment for the Office of Passenger Transportation, Maine Department of Transportation (MDOT), Augusta, ME. Civil engineering and site design services for a facility allowing day visitors and commuters to leave their cars and ride the Island Explorer propane-powered transit system through Bar Harbor and Acadia National Park. Master plan includes retail facilities, visitor and information center, parking, bus operations and maintenance facility, offices, and interpretive and nature trail system. Civil Engineer responsible for site layout of entrance road and parking lots.

Spring Street Reconstruction, Massachusetts Highway Department, Williamstown, MA. Spring Street Reconstruction consisted of roadway alignment analysis for drainage improvement, upgraded water utility and ADA compliance. Civil Engineer responsible for generating cross sections, grading and profile elements. Performed quantity takeoff and cost estimate. Generated profiles for side streets and driveways to be reconstructed.

American Legion Highway Reconstruction Project, City of Boston Public Works Department, Boston, MA. Civil Engineer responsible for AutoCAD management, curb alignment, pedestrian ramp design and preparation of traffic signage, striping and management plans for the full depth reconstruction of this 2.8 mile, four-lane divided arterial.

Plan and Profile of Route 28 (Broadway) over Route 213, Massachusetts Highway Department, Methuen, MA. Civil Engineer responsible for generating baselines, existing surfaces, profiles and cross sections for the full depth reconstruction of this four-lane divided

Education

BS, Civil Engineering, 1999, Worcester Polytechnic Institute (WPI), Worcester, MA

Registration

Professional Engineer, MA

Years of Experience: 10

arterial roadway bridge. Responsible for the generation of cut sheets from design files and preparation of traffic signage, striping and management plans. Coordinated and prepared the detailed quantity takeoff and construction cost estimate.

Route 18/JFK Highway Access Improvement Project, City of New Bedford, New Bedford, MA. Project consists of the alternatives development, analysis and preliminary design of a major urban arterial roadway connecting Route 195 and Downtown New Bedford. The project seeks to improve vehicular and pedestrian access and safety, maintain viable access to industrial areas and provide an aesthetically pleasing corridor. Civil Engineer responsible for the generation of cut sheets from design files and preparation of plans for initial public meetings. Developed design alternatives for key intersections and off ramps. Designed vertical alignments for urban arterial, local streets and highway ramp.

Gloucester Crossing Road Construction and Related Work, City of Gloucester, MA. Project consists of three separate roadway designs in various locations in the city of Gloucester, MA. Engineer responsible for coordination and development of Plans, Specifications and Estimate for Massachusetts Opportunity Relocation and Expansion (M.O.R.E.) Grant submission. Developed Horizontal and Vertical Alignments utilizing Autodesk Civil 3D package. Designed ramps for access between major highway and new city roadway using MassHighway Design Regulations. Provided Quality Assurance check of Sub-consultant site grading and drainage plans.

NStar Utility Relocation, Department of Public Works, Somerville, MA. Project consisted of relocation of underground Electric Utility lines along Somerville Avenue (1 mile). Engineer responsible for development of traffic management plans utilizing Manual on Uniform Traffic Control Devices (MUTCD) regulations.



Drew Talcoff, PE

Alignment and Grading (2C)

Mr. Talcoff is experienced in highway design, temporary traffic management, and construction review. He has conducted field inspections during roadway construction to ensure project quality and provided conception and design of roadway and bikeway facilities, preparation of cost estimate and specification preparation, and traffic management planning and plan preparation to accommodate roadway construction activities. He has also reviewed site plans to conform adherence to applicable zoning regulations and general engineering principals and prepared highway access permit applications for utility crossings and other construction activities. He is proficient in the use of AutoCAD/LDD, Softdesk, StormCAD, and MicroStation.

Towns of Acton and Maynard, Assabet River Rail Trail, Acton and Maynard, Massachusetts. Designed a 12-foot-wide multi-use path through Maynard and Acton along an existing railroad right of way. Merged path with existing roadways and walks in areas of discontinued railroad right of way, while minimizing acquisition of easements. Engineered placement of signage, as well as design of roadway and river crossings.

Town of Mashpee, Bikeway, Mashpee, Massachusetts. Designed 4000 foot bikeway extension along route 130, among the challenges of the project was aligning the path through a wooded rolling terrain, while minimizing impact to large growth trees, and maintaining existing drainage patterns.

MassDOT, Route 2 Reconstruction at Concord Rotary, Concord, Massachusetts. Project engineer for environmental permitting and 25% design for reconstruction and removal of the rotary on Route 2. Project includes environmental constraints such as a wild and scenic river designation, proposed wildlife crossings, historic sites and farmland, and a cemetery. Designed alignments and profiles for Route 2 ramps and realigned remaining roads currently serviced by the rotary to provide access to a proposed grade separated interchange above Route 2. The interchange was developed from three alternatives and included an overpass, bike and pedestrian connections, and minimization of environmental impact.

City of Salem, Canal Street, Salem, Massachusetts. Widened 1.25 miles of Canal Street corridor from the Washington Street traffic signal to the traffic signal at Loring Avenue to provide bicycle lanes while maintaining street parking. Improved roadway delineation by creating stretches of uniform cross sections. Provided

Education

BS, Civil and Environmental Engineering, University of Massachusetts, Amherst, 1996

Registration

Professional Engineer, Massachusetts, #46890

Years of Experience: 14

mid block crossings and softened horizontal curves to improve pedestrian safety. Designed alternative parking lot layouts for impacted abutters.

MassDOT, William H. Dalton Memorial Bridge, US Route 6 over Cohasset Narrows, Bourne and Wareham, Massachusetts. Designed widening of approach sections for footprint bridge, and laid out retaining wall alignment to eliminate slope impacts to the navigable waterway below.

Florida Department of Transportation, Central Florida Commuter Rail Transit Environmental Assessment and Conceptual Engineering, Orange County, Florida. Provided preliminary roadway profiles for redesign of 20 at-grade crossings to accommodate addition of rails and improve sight distance.

Town of Barnstable, Route 132 Widening Design, Barnstable, Massachusetts. Project engineer for the widening and reconstruction of a 2-mile section of Route 132, a principal arterial under control of MassDOT, with a traffic volume far in excess of the two-lane cross section. Designed new driveway to minimize profile grades and cross slopes, as well as facilitate drainage at golf course entrance impacted by widening of Route 132.

Town of Greenwich, South Water Street and Mead Avenue Roundabout Improvements, Greenwich, Connecticut. Field surveyed partially constructed roundabout and provided redesign for un-built portion to improve potential substandard drainage conditions resulting from discrepancies between constructed portion and original design.

Towns of Rochester, Wareham, and Marion, Route 28 County Road, Massachusetts. Preliminary drainage design and project estimate for the 5.5-mile Route 28 County Road corridor from Front Street in Marion to Route 28 in Rochester.



Drew Talcoff, PE

Town of Stoughton, Route 138 Widening, Stoughton, Massachusetts. Widened a section Route 138 at the intersection of York Street, to produce a four lane cross section and increase capacity enough to allow for the installation of a signal. Right of way and side slopes where among the greatest challenges in developing a workable alignment and cross section.

MassDOT, I-93 New Interchange at Lowell Junction and Add-a-Lane, Andover, Tewksbury, and Wilmington, Massachusetts. Project engineer for the EIS/EIR environmental permitting for a new interchange on I-93 including 75% design. Designed alignment and profiles for interchange ramps and a new roadway overpass providing future access to the west and intersecting with Burtt Road to the east, from there it becomes the Burtt Road extension and terminates at Ballardvale Road further to the east. The project also includes geometry improvements to Ballardvale Road, in the area of the intersection, to improve sight distance and design speed. The project also incorporates the addition of a fourth lane in each direction of I-93 in the Wilmington, Andover, and Tewksbury area.

MassDOT, I-95 Canton Interchange Evaluation, Canton and Dedham, Massachusetts. Project engineer for the new I-95/Dedham Street interchange. Designed horizontal and vertical geometry for the new I-95 north-bound off-ramp and the Dedham Street overpass. Took into account right-of-way impacts, conformance with MassDOT design requirements, and potential implications of an assumed one-lane exit ramp on the eventual design of the Dedham Street bridge.

Massachusetts Highway Authority, Central Artery Traffic Management Plans, Boston, Massachusetts. Produced plans for use with construction activities on Central Artery project, and developed construction plans for surface restoration.

NSTAR Electric Co., 345 kV Conduit along Route 138, Stoughton to Boston, Massachusetts. Designed traffic management strategy and produced plans for The Nstar Electric Company 345 kV conduit installation.

National Grid, Massachusetts. Designed traffic management plans and produced state highway permit applications for several National Grid improvement projects, including the Q169 and S145/T146 lines on the North Shore and the O42/R43 Line from Ayer to Dunstable.

Fall River Route 195, Fall River, Massachusetts. Developed a traffic management plan for City Hall Plaza Bridge rehabilitation over Route 195.

MassDOT, I-495 Lowell Bridge Bundle, Lowell, Massachusetts. Designed alignment, profile, and sections for temporary crossovers used in traffic management for the design-build contract to replace six bridges on I-495. Project includes bridge reconstruction of two bridges over the Concord River, two bridges over the B&M Railroad, and two bridges over Woburn Street. Reconstruction also includes minor widening and drainage improvements, construction of wildlife access, and milling resurfacing of those areas impacted by restriping and traffic switches.

Town of Medfield, Planning Board, Medfield, Massachusetts. Reviewed site plans and drainage calculations for conformance with zoning bylaws and subdivision regulations as well as general engineering principles.

Town of Dedham, Planning Board, Dedham, Massachusetts. Reviewed subdivision plan at Legacy Place for conformance with zoning bylaws and subdivision regulations, as well as general engineering principles.

Town of Methuen, Zoning Board, Methuen, Massachusetts. Reviewed subdivision plans for conformance with zoning regulations as well as general engineering principles.

Town of Medway, Zoning Board, Medway, Massachusetts. Reviewed preliminary and definitive subdivision plans as well as as-built plans for conformance with zoning regulations and general engineering principles.

Town of Medway Planning Board, Medway, Massachusetts. Performed field inspections of subdivisions to ensure that construction was in compliance with the Planning Boards rules and regulations, of a high quality, and was an accurate reflection of the approved subdivision plan.

Town of Norton, South Washington Street, Norton to Taunton, Massachusetts. Performed daily construction inspections for the widening and grading from Norton into the city of Taunton as part of an access improvement project for General Motor's new distribution facility in Norton.



Richard Devanna, PE, SECB

Structural (2A)

Mr. Devanna is the Structural Group leader and project manager in the Concord office. Since 1975, Mr. Devanna has provided structural design and construction inspection for municipal, commercial, and industrial projects including bridges, rapid-transit facilities, waterfront facilities, public works facilities, high-technology research and laboratory facilities, water and wastewater treatment facilities, retaining walls, and other civil structures. His bridge design experience has encompassed preliminary structures reports, type study reports, sketch plans, and PS&E contract documents for new design and bridge rehabilitation projects.

As the Structural Group Leader, Mr. Devanna's responsibilities include scheduling and supervising structural workloads, budget management for all structural staff on all projects, technical review and quality control for all structural designs, and development and training of structural staff.

City of Marlborough and Town of Hudson, Assabet River Rail Trail, Marlborough to Hudson, Massachusetts.

Project structural engineer for the proposed 12.5-mile rails-to-trails project. Designed an underpass of the Route 85 Connector roadway and the retrofit of a former railroad trestle to receive a new timber deck for bicycle use. Studied alternative underpass structure types including precast concrete arch, concrete box and conventional cast-in-place three-sided frame, and analyzed economics and functionality. Prepared a structural adequacy report for the 200-foot trestle and designed retrofit to accommodate a new timber deck. Oversaw design and preparation of sketch plans, final plans, specifications and estimates for both structures consistent with MassDOT procedures.

Town of Andover, Balmoral Street Bridge over Shawsheen River, Andover, Massachusetts. Project structural engineer for improvements of guardrail and guardrail transition structural deficiencies. Assess and prepare plans to eliminate deficiencies reported on MassDOT bridge inspection reports.

Town of Andover, Stevens Street Bridge over Shawsheen River, Andover, Massachusetts. Project structural engineer for improvements of guardrail and guardrail transition structural deficiencies. Assess and prepare plans to eliminate deficiencies reported on MassDOT bridge inspection reports. Project requires design and construction of new moment slab retaining wall to support new crash tested guardrail and transitions. Also preparing plans for concrete repair and scour countermeasures.

Education

MS, Civil and Structural Engineering, Northeastern University, 1981

BS, Civil Engineering, Northeastern University, 1974

Registration

Professional Engineer (Structural), #Structural Engineering Certification Board, 2008

Professional Engineer, Massachusetts, #30410, Professional Engineer, Virginia, #031332 Professional Engineer, Rhode Island, #5943 Professional Engineer, New Hampshire, #5627 Professional Engineer, Connecticut, #17492,

Years of Experience: 35

MassDOT, Pelham Road over Fort River, Amherst, Massachusetts. Responsible for design review of bridge type study report for single span bridge replacement with prestressed concrete box beams. Construction staging also required.

MassDOT, Brimfield and Palmer, Massachusetts.

Responsible for design overview and QAQC review for total bridge replacement of 120-foot span through truss. New superstructure to be single span steel plate girders to integral abutments placed behind existing cantilevered abutments.

MassDOT, Secondary/Off-System Bridge R&R Program, Hopkinton and Southborough, Massachusetts. Responsible for design overview and QAQC review for total bridge replacement using integral abutments placed behind existing gravity abutments. Superstructure is precast concrete spread box girders. Temporary structure required for stage construction.

MassDOT, William H. Dalton Memorial Bridge, US Route 6, Bourne and Wareham, Massachusetts. Project manager for replacement of a 5-span, 240-foot reinforced concrete girder bridge. Project scope includes substructure investigation to determine feasibility to use existing substructure, granite faced concrete piers on spliced footings, for new superstructure replacement. Complexities require 16-foot wider superstructure to be symmetrically cantilevered over existing pier using post-tensioning methods. Two lanes of traffic also need to be maintained during stage construction. Work will entail preliminary and final design, quantity



Richard Devanna, PE

estimates, and development of construction plans and specifications.

MassDOT, Sagamore Rotary Improvements, Bourne, Massachusetts. Engineer of record for design of soldier pile retaining walls located on private property required for roadway improvements. Design included performance specification for additional mechanically stabilized earth wall.

Connecticut Department of Transportation, I-95 Moses Wheeler Bridge Design Peer Review, Milford/Stratford, Connecticut. Project structural engineer for a mid-point design peer review for a 14-span segmental concrete box girder bridge carrying route I-95 over the Housatonic River. Focused on technical review of inprogress plans for conformance to acceptable design standards for segmental concrete bridge structures, feasibility of construction, span arrangements, stage-construction, and post-tension detailing. A report was prepared identifying areas of concern and recommendations.

MassDOT, Old Providence Road over Palmer River, Swansea, Massachusetts. Chief structural engineer for the redesign of concrete deck beam bridge supported on pipe pile bents. Due to unforeseen foundation obstruction during initial construction it was required to reconfigure the bridge with an additional span and relocated pier supports. Project required design for additional span and modification of drawings and specifications for re-build.

Town of Westford, Stony Brook Dam, Westford, Massachusetts. Project structural engineer for design of rehabilitation work at the Stony Brook Dam and Broadway Street Bridge. Design effort included field investigation at dam shelves, retaining walls, stone bridge abutments, and weir structure. Proposed plans and specifications for scope of repair for dam, retaining walls and stop gate stem and support replacement.

Connecticut Department of Transportation, Route 68 over I-91, Wallingford, Connecticut. Chief structural engineer for a design peer review and redesign of a two-span replacement bridge for Route 68 over Interstate 91. Bridge is 102 meters (335 feet) long of two span continuous prestressed/post tensioned spliced concrete girders (New England Bulb Tee), supported on full height abutment and pier columns. Peer review focused on design of 3-segment, post-tensioned spliced girders. Apparent deficiencies in girder capacities required redesign of already fabricated girder sections. Redesign of center girder segment over pier using a

haunched beam section allowed for use of existing end segment girders. Provided oversight and coordination of review, design, and QAQC.

MassDOT, Winter Street Bridge, Waltham, Massachusetts. Project manager for a design peer review of a 4-span replacement bridge for Winter Street over I-95. Bridge is 82 meters (270 feet) long with continuous prestressed/post tensioned spliced girders (New England Bulb Tee). Peer review focused on prestressed and post-tensioning aspects of girder design and details. Reviewed staged construction as it impacts post-tensioning.

MassDOT, Arthur J. D. Tommaso Memorial Bridge Review, Fitchburg, Massachusetts. Project manager for a design peer review of cable stay bridge structure over the MBTA and North Nashua River. Peer review focused on tower post-tensioning design and procedures. Review included assessments of the use of post-tensioning bars, bursting reinforcement design, installation equipment and procedures, durability of cable stay system and cable stay replacement procedures. A report of findings was performed and submitted to the MassDOT bridge engineer.

MassDOT, Providence Highway, Dedham, Massachusetts. Chief structural engineer for replacement of two bridges over High and Harris streets and linking retaining walls. Conducted investigations to evaluate the evidenced movement of deteriorated retaining wall structures and abutments. Participated in design of a 320-foot-long single replacement bridge of three-span continuous prestressed/post-tensioned concrete girders (New England Bulb Tees) and related wall structures. Existing roadway orientation, profiles, bridge skews, spans, and clear height requirements affected preliminary and final design efforts. Unconventional span ratios and bridge continuity required longitudinal post-tensioning design using state-of-the-art software. Foundations incorporated drilled piers. Limited clearance during construction was a key issue addressed during design and will affect demolition, stage construction, and traffic management. Design considerations for new retaining walls include reuse of granite stones from existing abutments in order to match and maintain current aesthetics of remaining walls. Work entailed preliminary and final design, quantity estimates, and development of construction plans and specifications in accordance with MassDOT standards.



Robert Hajjar, PE

Structural (2A)

Mr. Hajjar is a structural engineer with 27 years of professional experience. He has completed the conceptual through final designs for numerous bridge interchange projects and related infrastructure. He has also completed several restorations of historic truss bridges for the New Hampshire Department of Transportation. In addition, Mr. Hajjar has completed pedestrian-related structures for the MassDOT, National Park Service, and the Department of Conservation of Resources.

City of Marlborough and Town of Hudson, Assabet River Rail Trail (ARRT), Marlborough to Hudson, Massachusetts. Design structural engineer for the proposed 12.5-mile rails-to-trails project. Designed an underpass of the Route 85 Connector roadway and the retrofit of a former railroad trestle to receive a new timber deck for bicycle use. Prepared a structural adequacy report for the 200-foot trestle and designed retrofit to accommodate a new timber deck. Assisted in the design and preparation of sketch plans, final plans, specifications and estimates for both structures consistent with MassHighway procedures.

Town of Acton, Assabet River Rail Trail Conversion Design, Acton and Maynard, Massachusetts. Structural engineer for a 3.45-mile section of a proposed 12-foot-wide rails-to-trails conversion, which includes roadway and river crossings.

City of Lowell, Concord River Greenway, Lowell, Massachusetts. Project engineer for detailed civil and structural engineering, survey base mapping, right of way planning and acquisition, landscape architecture, and environmental permitting for a 4.8-mile recreational trail to connect downtown Lowell with the Bruce Freeman Trail, and the larger regional Bay Circuit Trail

Massachusetts Department of Conservation and Recreation, Multi-use Pathway Park Connections, Weymouth and Hingham, Massachusetts. Project manager for structural, civil, geotechnical, and traffic engineering for connection of town-owned parks by a trail system. Managing design of boardwalk connections and recommendations for a pedestrian crossing over the Back River. Managing design to balance the existing topography to provide ADA-compatible pathways linking each park under the Route 3A bridge.

City of Haverhill, Riverwalk Design, Haverhill, Massachusetts. Project manager and structural engineer for a 2.5-mile multi-use riverwalk through downtown

Education

MS, Civil (Structural) Engineering, Colorado State University, 1984

BS, Civil (Structural) Engineering, University of Lowell, Massachusetts, 1982

Registration

Professional Engineer, Massachusetts, #38403

Years of Experience: 27

Haverhill, across the Merrimack River, and connecting through the Bradford section of the city and back across the river to downtown. Design includes permitting, preliminary and final civil and structural design.

Lowell Parks and Conservation Trust, Concord River Neighborhood Trail, Lowell, Massachusetts. Design structural engineer for conceptual design, permitting, final design, and construction phase services related to a 1.5-mile multi-use trail from Lawrence Street to East Merrimack Street, following the banks of the Concord River.

National Park Service, Fall Overlook Greenway, Lowell, Massachusetts. Structural engineer for the structural related services involved in the design of improvements consisting of a public walk and greenway along the northerly bank of the Merrimack River. Overseeing the conceptual, preliminary and final design of two pedestrian bridges, over two separate water inlet areas.

National Park Service, Upper Pawtucket Canal Walk, Lowell, Massachusetts. Project structural engineer for design of improvements consisting of a public walk and greenway along the southerly bank of the Upper Pawtucket Canal. Oversaw the conceptual, preliminary and final design of a concrete pedestrian ramp structure at the Historic Canal walls and related retaining wall and boat sections.

Massachusetts Port Authority, Engineering Services, South Boston, East Boston, and Charlestown, Massachusetts. Structural engineer for a four-year oncall contract to provide design reviews, construction coordination and inspection, and design services. The primary focus of the project is Massport's developable properties ringing Boston Harbor. Responsible comprehensive design reviews to identify short and long-term impacts on Massport properties and existing Massport and tenant operations.



Robert Hajjar, PE

Massachusetts Port Authority, South Boston Waterfront Park and Roadways, Boston, Massachusetts. Senior structural engineer for the demolition of existing structures within the footprint of the project site for a new 1.2-acre waterfront park.

Massachusetts Highway Department, Central Artery/Tunnel (CA/T) Project D032A1, North End Park, Boston, Massachusetts. Project structural Engineer for the crown jewel of the Rose Kennedy Greenway. The park included extensive granite courtyards, fountains and an architecturally significant pergola structure extending for 300 feet along the greenway. Large underground pump rooms were placed between off ramps of the Central Artery tunnel and the fountain is on top of the tunnel roof in some locations. Steel and bronze railing systems are placed throughout the park.

MassDOT I-91 NB and SB over the Deerfield River, Stillwater Road and Lower Road, Deerfield, Massachusetts. Project manager and lead structural engineer for the complete replacement of twin 720-foot-long bridge structures over the Deerfield River and twin structures over Lower Road. Also included is a temporary corridor located in the median to allow the each bridge to be completely removed and replaced in one stage. The mile-long construction corridor includes temporary bridges over the Deerfield River, Stillwater Road and Lower Road.

MassDOT, Accelerated Bridge Program, Route 85 over the Sudbury River, Southboro, Massachusetts. Project manager and lead structural engineer for the replacement of a 60-foot span reinforced concrete bridge. The superstructure will be Inverset type prefabricated steel beams with a reinforced concrete deck supported on integral abutments. The use of prefabricated components will allow much faster construction.

MassDOT, I-93/I-95 Interchange Permitting and Preliminary Design, Canton, Massachusetts. Structural lead for preliminary through final design for the replacement of the Dedham Street Bridge over I-95. The new bridge will be five lanes wide and accommodate on and off ramps to I-95 and include long retaining walls. The superstructure will be steel plate girders with a reinforced concrete deck.

MassDOT, Kings Road Bridge over the Quabog River, Brimfield, Massachusetts. Project manager and lead structural engineer for the replacement of a 140-foot-span steel truss. The superstructure will be steel plate girders with a reinforced concrete deck supported on integral abutments.

MassDOT, Route I-495 Interchange, Marlborough, Massachusetts. Structural project manager for the final design of two curved steel box girder viaducts. The completely new interchange serves an adjacent industrial park. Traffic control during girder erection was critical to the project's success.

MassDOT, Central Artery/Tunnel Project D012A, I-93
Massachusetts Avenue Interchange, Massachusetts.
Technical leader for the Frontage Road northbound bridge, a six-span continuous prestressed concrete bridge, and the Massachusetts Avenue Bridge, a three-span continuous structure. Responsible for the final design of two large multilevel pump stations, pedestrian access ramps, and multilevel stairs.

Metropolitan District Commission, Constitution Beach Pedestrian Overpass, Massachusetts. Structural project manager for the final design of prestressed concrete bridges, ramps, and stairs over the Massachusetts Bay Transportation Authority (MBTA) commuter tracks including custom precast elements and stair structures.

MassDOT, Footprint Bridge Program, Massachusetts. Project manager for the production of type studies, sketch plans, and final design documents for small program bridges. Shop drawing review and construction engineering services were also completed.

MassDOT, Metric Bridge Manual, Massachusetts. As project manager, prepared several new chapters of the metric bridge manual and reviewed the complete document. New chapters contained elastomeric bearings for the standard steel or concrete bridge types and highway guardrail transition standard drawings for all barrier types and applicable test levels.

MassDOT, Central Artery/Tunnel (CA/T) Project D019B, I-93 Viaducts North of the Charles River, Massachusetts. Technical leader for the design of 12 different temporary ramps, shoring structures, deck slab overlay structures, and bent modifications. Served as technical lead for three steel box girder viaducts serving Storrow Drive. Served as project manager for Miller's River Littoral Way. This pedestrian bridge and walkway is a CA/T public arts project with an artist-driven, architecturally significant design.



Frederic Curtin, PE

Structural (2C)

Mr. Curtin has more than 23 years of construction and engineering experience. During seven years in the construction industry, he gained experience in the design of commercial, industrial, petrochemical, and residential facilities throughout the Northeast Region of the United States, Canada, and Singapore. As a Senior Structural Engineer with AECOM Transportation for the past 16 years, Mr. Curtin has gained exceptional experience in mass transit and facility design and construction. His responsibilities have included both the management and performance of site investigation and evaluation, engineering design, preparation of contract plans and specifications, construction cost estimates, and management of construction phase services.

Massachusetts Highway Department (MassHighway), Statewide Bridge Rehabilitation/Replacement Program Gulf Road over Apponagansett River, Dartmouth, MA. As a Senior Structural Engineer performed independent structural evaluation of proposed bridge structure design and contract documents. The bridge consists of a three span continuous structure with an approximate overall span length of 135 feet on a 1600 foot radius curve. The superstructure is composed of spread precast prestressed concrete box girders supported on integral H-pile supported abutments and steel pipe pile supported piers. The project required the analysis of the superstructure and substructure for phase construction in order to maintain one active travel lane at all time.

Massachusetts Highway Department (MassHighway), Route 128-NB & SB and Route I-95-NB & SB over Massachusetts Bay Transportation Authority Railroad, Westwood, MA. As lead Structural Engineer, assisted in the development of project proposal, design schedule, and man-hour estimate; and directed the development of project Type Study Report, geotechnical survey and report, structural analysis, and preparation of plans, specifications, and cost estimates. Project required the evaluation of both existing northbound and southbound, three span, steel stringer and concrete deck bridges for possible modification and rehabilitation for widening to add an additional travel lane in each direction. In addition, required the evaluation of current railroad right-of-way below the bridge. Final solution was to replace both bridges with new three span continuous steel stringer superstructure with composite deck, founded on soil supported piers and abutments. New bridge structures were required to be built in phases, so as to provide uninterrupted traffic flow during construction.

Education

BS, Civil Engineering, 1986, Wentworth Institute of Technology, Boston, MA

Registration

Professional Structural Engineer, MA, #39098 Professional Structural Engineer, RI, #8064

Years of Experience: 23

Massachusetts Highway Department (MassHighway), Statewide Bridge Rehabilitation/Replacement Program Eleventh Street over Utility Canal, Montague, MA. As Structural Engineer performed site inspection of existing structure, reviewed plans and documents, and developed calculation and sketches for bridgerating report for submission to client. Project required the evaluation of an existing, historically significant, single-span, triple-barrel-riveted steel, double-intersecting Warren through truss.

Massachusetts Highway Department (MassHighway), Statewide Bridge Rating Program Powder Point Bridge, Powder Point Avenue, Over Duxbury Bay, Duxbury, MA. As Structural Engineer, performed site inspections of the existing superstructure and substructure, reviewed original documentation and plans for conformity to field survey, and developed calculations and rating report. Project required the evaluation of 112 span, 2200 foot long, wood stringer and deck bridge, supported on wooden pile bents. Evaluation consisted of load ratings for bridge superstructure and substructure pile bents.

Massachusetts Highway Department (MassHighway), Statewide Bridge Rehabilitation/Replacement Program Hale Street Bridge/YMCA Drive Over B&M Railroad, Lowell, MA. As Structural Engineer, coordinated the development of the structural analysis and contract documents, i.e., plans, specifications, and cost estimates. Project required the replacement of an existing single-span, through-truss bridge with a three-span, continuous-steel-stringer and concrete deck bridge. This required the evaluation of the existing structure to determine if it could be rehabilitated, and the development of a proposed new bridge structures.

Massachusetts Highway Department (MassHighway), Statewide Bridge Rehabilitation/Replacement Program Phineas Street Over Beaver Brook, Dracut, MA. As Structural Engineer, developed the geotechnical report for the proposed foundation system, coordinat-



Frederic Curtin, PE

ed and developed the structural analysis and contract drawings, and developed the cost estimate. Project required the replacement of an existing concrete arch bridge with a single-span, twin steel box girder bridge.

Massachusetts Highway Department (MassHighway), Statewide Bridge Rating Program Bullard Street, Over Willett Pond Outlet, Walpole, MA. As Structural Engineer, performed site inspections of the existing superstructure and substructure, developed material testing program for existing reinforced concrete structure, reviewed original documentation and plans for conformity to field survey, and developed calculations and rating report. Project required the evaluation of a triple cell cast in place concrete culvert.

Massachusetts Highway Department (MassHighway), Statewide Bridge Rating Program East Nilsson Street, Over MBTA/CSX Railroad, Brockton, MA. As Structural Engineer, performed site inspections of the existing superstructure and substructure, reviewed original documentation and plans for conformity to field survey, and developed calculations and rating report. Project required the evaluation of a single span adjacent precast / prestressed deck beams.

Massachusetts Highway Department (MassHighway),
Dorchester Branch Temporary Railroad Bridge over
Fort Point Channel Central Artery/Tunnel Project,
Boston, MA. As Structural Engineer, coordinated and
developed the structural analysis and developed plans.
Project required the design of a replacement bridge
to carry three active rail lines over a proposed excavation for the construction of tunnel structures for the
Central Artery/Tunnel Project. Structure consisted
of continuous curved plate girder supported on pier
foundations.

Massachusetts Highway Department (MassHighway), Statewide Bridge Rehabilitation/Replacement Program Depot Street over Dwight Canal, Chicopee, MA. As Structural Engineer, coordinated and developed structural analysis; developed plans, specifications, and cost estimates; provided shop drawing review and technical advice during construction. Also coordinated in the development of a temporary bridge over the existing canal to maintain access over canal during construction. Project required replacement of an existing concrete and masonry arch bridge with a steel stringer and concrete deck bridge. This required the evaluation of the existing canal and bridge for modifications and/or replacement to install the new bridge structure.

Massachusetts Highway Department (MassHighway), Statewide Bridge Rehabilitation/Replacement Program Allen Street over Salisbury Brook, Brockton, MA. As Structural Engineer, coordinated the development of the structural analysis, plans, specifications, and cost estimate, provided shop drawing review and technical advice during construction. Project required the replacement of an existing single-span, wrought-iron stringer and concrete bridge with a single-span bridge composed of butted precast, prestressed concrete beams. This required development of a geotechnical report, water quality certificate, and a type-study report.

Rhode Island Department of Transportation, Route 24 over Hummock Avenue, Portsmouth Rhode Island, RI. As a Senior Structural Engineer performed evaluation of an existing 1950 single span reinforced concrete rigid frame structure for upgrades to current ASSHTO LRFD loading and widening to accommodate the addition of a new entrance ramp. The bridge superstructure has an overall span length of approximately 70 feet, with abutments bearing on spread footings. Modifications included a proposed composite topping slab to strengthen the existing deck slab for the LRFD loading criteria and the design of a new widened section composed of a reinforced rigid frame similar to the existing.

Colorado Department of Transportation, Austin Bluffs Interchange at Union BLVD, Powder Point Avenue, Over Templeton Gap Floodway, Colorado Springs, CO. As a Senior Structural Engineer performed independent structural evaluation of proposed bridge structure design and contract documents. The bridge consists of a two span continuous structure with an approximate overall span length of 196 feet and variable deck width from 42 feet to 57 feet. The superstructure is composed of Colorado Bulb tee's which are supported on integral abutments and a drilled shaft supported center pier.

Massachusetts Bay Transportation Authority (MBTA), Haverhill Main Line Rehabilitation, Merrimack River Bridge Rehabilitation, Haverhill, MA. As Structural Engineer, performed site inspections of the existing superstructure and substructure, reviewed original documentation and plans for conformity to field survey, and developed plans and calculations for report to client. Project required the evaluation of an existing 12-span, truss-and-plate-girder bridge superstructure and stone masonry piers and abutment substructures.



Christie Baker, PE

Structural (2C)

Ms. Baker has more than 13 years of experience as a structural engineer. She has designed and analyzed a number of cut and cover tunnels, as well as a wide variety of bridges ranging from structural steel box girders with integral steel bents to prestressed AASHTO I-girder bridges and steel wide flange beams on reinforced concrete substructures.

Massachusetts Highway Department, Route 28 over Route 213, Methuen, MA. As Senior Structural engineer, completed type study through final design of this two span continuous composite steel plate girder bridge. Staged construction was involved, as was the design of the substructure of a temporary bridge.

MassHighway, Route 128-NB & SB and Route I-95-NB & SB over Massachusetts Bay Transportation Authority Railroad, Westwood, MA. As structural engineer, responsible for the final design of this highly skewed three span continuous, composite steel plate girder bridge on reinforced concrete piers and stub abutments on piles. The design of this bridge involved staged construction and a complex seismic analysis manipulating bearings to distribute forces as desired.

Route 38 Bridge (W-38-002) over B&M Railroad, MassHighway, Wilmington, MA. Project Manager responsible for the type study to replace an existing two span steel stringer bridge with a three span plate girder structure. The construction of the replacement bridge will require staged construction in order to maintain the required four lanes of traffic during replacement.

Massachusetts Highway Department (MassHighway), Bridge Rating Program. As Structural Engineer, responsible for the analysis and live load rating of various bridges throughout the state. Bridges that were rated included steel girder bridges, steel trusses, a precast deck beam bridge and precast concrete box beam bridge.

Massachusetts Bay Transportation Authority (MBTA), Red Line Station Rehabilitation at Ashmont. As structural engineer, responsible for final design of 13 span highly curved and skewed steel bridge. The substructure design consisted of reinforced concrete wall piers on drilled shafts, hammerhead piers on spread footings and stub abutments on spread footings. This viaduct was designed for both train loads and bus loads. A portion of the viaduct was eliminated and contained mechanically stabilized earth walls.

Education

MS, Structural Engineering, University of Massachusetts, Lowell, MA, 2000

BS, Civil Engineering, The Catholic University of America Washington DC, 1994

Registration

Professional Engineer, MA, #41411

Years of Experience: 13

MassHighway, Central Artery/Tunnel Project, Ramps North of the Charles River, (Contracts D019B1 & B8) Boston, MA. Served as Structural Engineer for these two projects, totaling \$240 million, consisting of over nine lane miles of elevated viaducts. The superstructure consists of steel trapezoidal box girders supported by concrete hammerhead and multi-level straddle bents supported on large diameter drilled shaft foundations. Responsibilities included analysis, design and detailing of many of the continuous box girder units and static/seismic analysis of substructure and foundation elements. Many of the ramps were highly curved with variable width roadways, and some had skewed piers. This work also included design and detailing of a double-deck steel rigid frame bent with integrally framed box girders on both levels.

American Airlines Terminal Redevelopment Project, John F. Kennedy Airport, Jamaica, NY. As Structural Engineer, responsible for the final design of six hundred feet of cast in place reinforced concrete pedestrian tunnel connecting two concourses, and the basement level of the terminal which serves as the transition area between the tunnel and concourse. The tunnel and basement sections were designed in accordance with AASHTO, ACI, the New York City Building code, and FAA criteria for aircraft loading. The project required extensive use of GT-STRUDL for analysis.

Fulton Street Transit Center, Metropolitan Transportation Authority (MTA), New York, NY. As Senior Structural Engineer, responsible for design and 3D analysis of base slab of the tunnel and station as part of a design build contract. The Dey Street Connector will align with and exist under Dey Street in close proximity to the World Trade Center Site connecting the proposed Fulton Street Transit Center to the proposed PATH Station.



Kathy Schaeffer, PE

Drainage and Utilities (2A)

Ms. Schaeffer has more than 20 years of experience in planning, design, site grading, drainage design, construction phasing, and construction document preparation for both public- and private-sector facilities.

MassDOT, Reconstruction of a Section of Columbia Road, Boston, Massachusetts. Civil engineer involved in preparing construction documents including layout, grading, profile, and traffic management plans; a construction cost estimate; and construction specifications for 0.8 miles of roadway for the city of Boston. The project required approvals from the city, MassDOT, and the Federal Highway Administration.

Massachusetts Port Authority, Airside Tunnels and Utility Delivery System at Logan International Airport, Boston, Massachusetts. As civil engineer, prepared construction documents for utility services to the pedestrian walkways from the west parking garage to Terminals A and E. Also prepared construction documents for utility relocations associated with the expansion of Terminal E.

MassDOT, Rest Area Improvements Project/Tourist Information Center, Greenfield, Massachusetts. Civil engineer for a new tourist information center for the traveling public along Route 2A on I-91. Responsible for site grading, layout, utility design, pavement markings, signage, and traffic management plans for construction documents.

Town of Stow, Lundy Parcel Concept Study at Assabet River Rail Trail, Stow, Massachusetts. Project manager for conceptual plans showing the feasibility of developing a parcel of land the town is considering purchasing. Managing compilation of a base plan based on available information, review of the town's subdivision and zoning regulations, and development of two conceptual plans showing how the land could be developed and how the rail trail would cross the site. Managing preparation of conceptual-level construction cost estimates for the two plans.

City of Melrose, Stone Place Development Peer Review, Melrose, Massachusetts. Conducting a peer review of a proposed 300-unit residential community, a mix of new construction and renovation of two existing mill-style buildings located within Melrose's Smart Growth District. Managing review of traffic, water, wastewater, and stormwater elements.

Glen Ellen Country Club, Housing Development Permit Assistance, Millis, Massachusetts. Civil engineer

Education

BS, Civil Engineering, University of Lowell, 1986

Registration

Professional Structural Engineer, MA, #36501

Years of Experience: 20

for permitting and engineering services in connection with an application for a special permit from the town of Millis for a 324-unit senior housing development. The project included preparation of preliminary grading plans, and preliminary utility plans showing water, sewer and drainage systems.

Bayswater Development, LLC, Section 5 at New Seabury, Mashpee, Massachusetts. Civil engineer involved in site layout and full engineering and landscape design services for construction of 200 attached and semi-attached luxury residential condominium units adjoining the New Seabury tennis complex and golf driving range at the New Seabury Resort on Cape Cod. Providing engineering of special measures to protect the Rock Landing Wells, two public water supply wells supplying half the town's potable water. Preparing site layout, infrastructure design, design of a sewage pump station and force main, and informal site plan review by the Cape Cod Commission.

Bayswater Development, LLC, Sea Quarters at New Seabury, Mashpee, Massachusetts. Civil engineer involved in site layout and full engineering and land-scape design services for construction of 50 attached and semi-attached luxury residential condominium units. Preparing site layout, infrastructure design, coordinating the design of a sewage pump station and force main, and informal site plan review by the Cape Cod Commission.

Bayswater Development, LLC, Section 5, New Seabury, Massachusetts. Project civil engineer providing support for preparation of a development agreement between the property owner and the Cape Cod Commission. Work included preparation of plans to assess the development options and impacts of each option on the site. The site is located adjacent to a public water supply source for the town of Mashpee. Preliminary grading and utility plans were prepared.

Taco, Inc., Manufacturing Facility Addition, Cranston, Rhode Island. Project civil engineer for an addition to



Kathy Schaeffer, PE

the existing facility. Work included preparation of a site plan identifying grading, erosion control and utilities.

372 North Beacon Street Trust, Site Assessment and Development, Brighton, Massachusetts. Project engineer for topographic and property line survey for a base plan and map and for review city zoning code to determine the maximum building size according to zoning and identify variances required. Feasibility of up to three concepts were examined: a mix of drivethru businesses, retail first floor with office second floor, and full parking garage for a car dealer.

Taco, Inc., Manufacturing Facility, Cranston, Rhode Island. Project civil engineer for new parking area for the existing facility. Work includes preparation of plans for site plan approval by the city of Cranston and bid documents. Project includes design of new paved parking lot, grading, drainage, lighting and landscaping.

Outlet Mall Development Engineering Review, Merrimack, New Hampshire. Civil engineer responsible for reviewing stormwater impact on adjacent property resulting from proposed project. Also coordinated review of water, sewer and blasting impacts. Prepared memo for client detailing issues.

North Andover Planning Board, Plan Review, North Andover, Massachusetts. Provided on-call peer review of engineering plans. Town engineer to review all permit applications. Reviewed site plans and subdivision plans. Evaluated drainage design for compliance with Massachusetts DEP stormwater standards. Prepared reports on noncompliant issues.

Town of Sharon Planning Board, Plan Review, Sharon, Massachusetts. Provided on-call peer review of engineering plans. Reviewed site plans and subdivision plans. Evaluated drainage design for compliance with Massachusetts DEP stormwater standards. Prepared reports on noncompliant issues.

Barnstable Municipal Airport, New Terminal, Hyannis, Massachusetts. Civil engineer responsible for preparing site utility drawings for the new terminal building.

AFCEE, 4P A-E08, Asphalt and Concrete Parking Ramp Repair Design, Westover ARB, Massachusetts. Project manager for preparation of construction contract documents for repair of an asphalt and concrete parking ramp. Managing design of pavement, grading, and drainage improvements; field survey; and geotechnical subsurface investigation.

Rhode Island Airport Corporation, Quonset Airport New Customer Hangar, North Kingston, Rhode Island. Project civil engineer for construction administration services for a new FBO aircraft hangar at Quonset Airport. Work includes review of shop drawings, responding to contractor questions and site visits.

Nantucket Memorial Airport Commission, Terminal Addition and Renovations, Nantucket, Massachusetts. As civil engineer, prepared construction documents for early site work and foundation bid documents. Plans included site preparation, layout and material, grading and drainage. Work also included construction administration services including shop drawing review, and responding to contractor questions.

Massachusetts Port Authority, Logan International Airport Facilities 2 Phase 2 Document Review, East Boston, Massachusetts. Project civil engineer for document review of 90% drawings and specifications prepared by another consultant for Massport. Reviewed documents for completeness, clarity, and coordination.

Martha's Vineyard Airport Commission, New Passenger Terminal and Associated Site Work, Martha's Vineyard, Massachusetts. Civil engineer responsible for the demolition of existing buildings, the construction of a new terminal building, and site improvements. Work included horizontal and vertical alignments for new roadways and parking areas, grading, drainage, and site plan approval.

New York State Department of Transportation, Bridge Widening/Replacement on I-87, the Adirondack Northway, Albany, New York. Civil engineer involved with the grading and drainage of a new ramp onto I-87 at interchange 4. Prepared construction documents and the construction cost estimate.

MassDOT, On-Call Technical Support, Statewide, Massachusetts. Providing on-call services to MassDOT for design and review services. The first assignment is a small footprint bridge replacement design. The second assignment is to assist MHD with the review of final plans, specifications, and estimates from other consultants prior to advertising for contractor bids.



Christopher Longenbaker, EIT

Drainage and Utilities (2A)

Mr. Longenbaker is an engineer with experience in stormwater drainage analysis, highway design, drafting, and writing. His experience includes highway and transit and rail related work. Drafting experience is with both AutoCAD/Civil 3D and MicroStation, and stormwater analysis experience includes extensive use of HydroCAD software. At a previous employer, Mr. Longenbaker assisted with on-site inventory and inspection of commuter rail platforms, and his senior capstone project consisted of conceptual design and public presentation of proposed bike lanes for the city of Boston.

MassDOT, Route 2 Concord Rotary Interchange, Concord, Massachusetts. Project team engineer for the environmental permitting and 25 percent design for reconstruction and removal of the Concord Rotary, which includes some environmental constraints. Performed work related to delineation of wetland buffer zones (ANRAD plans) and determined areas of potential hazardous material constraints. Work also included stormwater drainage analysis (using TR-55 and HydroCAD), modeling, and writing the stormwater management section for the DEIR. Also drafted several alternatives for rerouting vehicular access to the MCI Concord State Prison and state police barracks in addition to reconfiguration and addition of parking to these facilities. Also assisted in the preparation of full color plan renderings to be used for the presentation of two of the alternatives at a public open house. The project's proposed interchange was developed from three alternatives and included an overpass, bike and pedestrian connections, and minimization of environmental impact.

MassDOT Highway Division, I-95 Canton Interchange, Canton, Massachusetts. Project team engineer focused on drainage analysis and modeling using TR-55 and HydroCAD as well as creating spreadsheets to calculate necessary volumes. Involved checking prior work by other team members and designing and modeling custom outlet structures to regulate flows while working within limited site space, site environmental constraints, as well as tight time/budget constraints, Work also involved some delegation and direction of tasks to a co-op student/intern.

Education

BS, Civil Engineering, Northeastern University, 2008

Registration

Engineer-in-Training, #21960

Years of Experience: 2

MassDOT, Route 85 Hopkinton/Southborough Bridge Replacement, Hopkinton, Southborough, Massachusetts. Project team engineer. Wrote and prepared a memorandum recommending one of two bridge replacement alternatives. The memo analyzed and compared two bridge replacement alternatives by estimating their impacts to wetlands, utilities, and staging options. Analysis required calculations and CAD work including profile and cross section creation as well as grading. The existing Rte. 85 bridge over the Sudbury River on the Hopkinton/Southborough town line was constructed in the 1930s and is slated for replacement as a part of the accelerated bridge program.

MassDOT, I-495 Lowell Bridge Bundle, Lowell, Massachusetts. Project team engineer; assisted with response to TMP comments and plan edits as well as with grading of the proposed Woburn Street bridges. Also imported survey points and used in creating surfaces in Land Desktop.

MassDOT, I-93 New Interchange at Lowell Junction and Add-a-Lane, Andover. Tewksbury, Wilmington, Massachusetts. Project team engineer focused on preliminary drainage analysis and compilation of existing drainage information. Project included EIS/EIR environmental permitting and 75% design for a new interchange on I-93 as well as adding a lane on I-93 in the Wilmington, Andover, Tewksbury area. This project will relieve traffic congestion and open up one million square feet of new economic development.

Massachusetts Bay Transportation Authority, Urban Ring, Phase II RDEIR, Massachusetts. Assisted with changes to plans and plan production. The Urban Ring project aims to improve transit in the cities of the Boston area by creating new connections to existing transit along a new transit route that roughly circumscribes Boston, Phase II deals with the implementation of bus rapid transit (BRT) routes to achieve these improved connections.



Jeffrey Delnnocentis, PE

Drainage and Utilities (2C)

Mr. DeInnocentis has four years of experience in the engineering and construction fields. His experience includes roadway and civil site design, construction site inspection, paving inspection, AutoCAD drafting, site surveying and layout, performing cost estimates, and reviewing shop drawings, documents, and calculations. He is knowledgeable of construction site operations, coordinating and communicating with contractors, and the use of surveying equipment. He is familiar with AutoCAD, Excel spreadsheets, Word, PowerPoint, Microsoft Project, HydroCAD, and other software.

Town of Maynard, Assabet River Rail Trail, Maynard, Massachusetts. Calculated quantities and created cost estimate for Maynard segment of ARRT. Labeled and dimensioned drawings. Created volume table and edited proposed slope of trail.

Lowell Parks and Conservation Trust, Concord River Neighborhood Trail, Lowell, Massachusetts. Edited an labeled conceptual plans related to a 1.5-mile multi-use trail from Lawrence Street to East Merrimack Street, following the banks of the Concord River. Provided quantity calculations and cost estimate. Conducted site visit to observe site work.

City of Lowell, Concord River Greenway - Phase II - Part I, Lowell, Massachusetts. Worked on design, coordination, specifications, quantity calculations, drainage calculations and report, and cost estimate for Phase II consisting of a walkway, drainage, and small parking area along the Concord River at Lawrence Street. Responsible for production of plan set including cover, legend, details, typical section, general plans, and profile. Coordinated with subconsultant on landscape plans.

City of Lowell, Concord River Greenway - Phase II - Part II, Lowell, Massachusetts. Worked with structural engineer to design and create plan set including a proposed prefabricated bridge to be set on proposed abutments and connecting on one side into Phase II - Part I, and on the other side into a proposed ramp supported on both sides by proposed retaining walls. Responsible for civil and structural drawings including, plans, elevations, sections, details, profiles.

Park Service, Fall Outlook Greenway, Lowell, Massachusetts. Edited and labeled design plans for portions of project consisting of a public walk and greenway along the northerly bank of the Merrimack River. Plotted final plans.

Education

BS, Civil Engineering, Merrimack College, 2005

Registration

Professional Engineer, MA, #48723

Years of Experience: 4

MassDOT, Footprint Bridge Program, Massachusetts. Drafted final edits to Attleboro bridge abutment sections. Entered data for deflection calculations and edited bridge drawing.

City of Cambridge, Porter Square Improvements, Cambridge, Massachusetts. Evaluated design and as-built construction of wheel chair ramps in project that included the realignment and reconstruction of an urban signalized intersection, the design of a pedestrian plaza as well as sewer and drainage improvements. Calculated and compared as-built slope with design slope of multiple ramps, some of which did not meet standard slope requirements. Created re-grading alternatives to ramps that would require removal and reconstruction. Surveyed the site with smart-level to confirm contractor's as-built information. Created and updated as-built drawing.

Town of Templeton, Baldwinville Road Improvements, Templeton, Massachusetts. Aligned scanned plans for approximately three miles of two-lane highway connecting Templeton Center with Baldwinville to be used in presentation. Created conceptual centerline, edge of road, and sidewalks.

Town of Rockport, New Concert Hall, Rockport, Massachusetts. Conducted parking study to determine vehicle volume along various roadways and lots at hourly periods. Created usable flood map for site. Located information on various site and drawing issues. Edited civil NOI and site plan review drawing sets, and created detail drawings.

Town of Dedham, Legacy Place Commercial Center, Dedham, Massachusetts. Analyzed drainage proposals and located inconsistencies. Checked calculations on irrigation and infiltration systems. Checked turning movements and parking counts. Suggested changes to vehicle turning, and parking corrections. Walked site to observe wetland locations and conditions.



Jeffrey DeInnocentis, PE

Town of Plymouth, Site Inspections, Plymouth, Massachusetts. Conducted site inspections, inspecting such items as drainage installation, curbing, sidewalk, compaction testing, paving, and observing site conditions. Marked grass strip areas for reseeding at The Ponds. Sites inspected include Colony Place, Chilton Park Village, Mill Pond Landing, Bog View Estates, The Trails, Little Hios Hills, Pickerel Cove, Orchard Hills, Grace Estates, and Great South Pond Estates. Wrote and filed a complete report for each inspection.

Town of Dighton, Site Inspection, Dighton, Massachusetts. Conducted site inspections at Stonegate Landing subdivision, including sewer line installation and connection to town line. Witnessed vacuum testing of sewer manholes and pressure testing of sewer lines. Wrote and filed a complete report for each inspection.

Town of Northbridge, Sutton Street, Northbridge, Massachusetts. Conducted site walk survey to gather information on street where widening had been proposed several years earlier. Compared survey results and made appropriate edits to previous plans. Updated older files with current details and converted all units from metric to English units.

Mashantucket Pequot Tribal Nation, Foxwoods Lot 9
Expansion, Connecticut. Organized and received plans and various packages of data. Marked and redistributed for review according to discipline. Created spreadsheet for file organization. Logged and tracked material comments.

Massachusetts Executive Office of Transportation, Urban Ring Phase 2 RDEIR/DEIS, Boston, Massachusetts. Worked on multiple plan and profile drawing sets for Urban Ring Phase 2, containing baseline alignments for alternatives one through four, hybrids, and LPA's. Created various individual plan and aerial drawings for both overall and specialized areas of the project including Longwood Medical Area, Ruggles Street, BU Bridge, GJRR, Commonwealth Avenue, and others, which were used for design and presentation. Conducted preliminary quantity calculations of busways, bus lanes, viaducts, and tunnels for entire scope as well as broken-down segments and sectors. Compiled preliminary cost estimate for overall project and individual sectors. Worked on Hybrid and bus route presentation drawings. Assembled station summary table. Conducted travel time study. Drafted typical section details for various busway sections including bridge and underpass. Drafted various busway, bridge, and tunnel concept plans.

Town of Holyoke, Resnic Blvd, Holyoke, Massachusetts. Drafted and worked on design of roadway improvement project, which included roadway alignment, traffic marking and wheel chair ramp configuration, grading, compiling curve tables, and editing plans for submission.

Massport Engineering Services, South Boston Property, Boston, Massachusetts. Conducted site survey to obtain elevations and grading data. Compared survey results with as-built information obtained by contractor to determine whether settling had occurred, and liability for nonconforming grades. Edited proposed drawings.

Town of Plainville, Site Inspections, Plainville, Massachusetts. Conducted site inspections, inspecting such activities as paving and infiltration system installation. Sites inspected include Oak Hill, 62 South Street Baptist Church, Pediatric Dental, and Honeydew Donuts. Wrote and filed a complete report for each inspection. Site inspections for 2007 included 96 Taunton Street, Oak Hill, Walnut Hill Estates, and Lowe's. Items inspected included infiltration system, stormceptor, manhole, catch basin, detention basin, drain pipe, and other installations. Conducted sight distance studies for 1 Washington Street, 16 High Street, and 25 Taunton Street. Performed site plan reviews and bond estimates. Projects worked on and/or inspected in 2008 include Witherell Place, 25 Taunton Street, South Street Liquors, Messenger Street Condominiums, Commerce Park, Twin Gates Farm, and 2 Wilkins Drive. Projects reviewed in 2009 include 27 Taunton Street and the National Grid substation.

Town of Quonset, Quonset Airport FBO Terminal, Quonset, Rhode Island. Researched zoning laws including handicap parking and fire lane requirements for design of parking lot for a small airport. Conformed drawings on file with the given CAD standards. Designed preliminary drainage location and setup. Edited curbing and landscape to meet parking space requirements. In 2007, made preliminary and final edits to civil plan set, including legend, existing conditions plans, proposed site plan, utility plan, drainage and grading, details, and landscape plan. Conducted construction services including shop drawing review and site visits to view and evaluate site work/progress.



Brian Myers, PE

Drainage and Utilities (2C)

Mr. Myers has six years of experience in transportation and highway engineering services throughout New England for public and private-sector clients. He specializes in producing bid packages using Autodesk Civil Series software bundle and design applications. Mr. Myers also has field experience through construction inspection services.

Massachusetts Department of Transportation, Route 85 (River Street) over Sudbury River, Hopkinton & Southborough, Massachusetts: Developed highway plans for 25% submission. Established vertical and horizontal layouts, typical sections and traffic management plans. Estimated cost of construction.

Fay, Spoffard, and Thorndike, Inc., Massachusetts Department of Transportation, Dedham Street / I-95 Interchange, Canton, Norwood & Westwood, Massachusetts: Provided a pavement design for roadway reconstruction of Dedham Street, new I-95 off-ramp, and cold plane and overlay for Shawmut Road and I-95 on-ramp.

City of Salem, Canal Street Rehabilitation, Salem, Massachusetts: Oversaw the development of construction documents for 25% design. Established horizontal and vertical layouts as well as typical sections. Prepared construction quantity takeoffs and cost estimate.

Town of Hingham, Beal Street from Sgt. William B. Terry Drive to Fottler Road, Hingham, Massachusetts. Coordinated project development with state and town officials, and surveyor. Developed construction documents from preliminary to final design. Established horizontal and vertical layout as well as pavement design and typical sections. Prepared construction quantity takeoffs and cost estimate. Developed design schedule.

Education

MBS, Civil Engineering, University of New Hamshire, 2004

Registration

Professional Engineer, MA, #48737

Years of Experience: 6

Massachusetts Youth Soccer Association, Lunenburg Road/ Route 70 at Old Union Turnpike - Roundabout Design, Lancaster, Massachusetts. Developed construction documents. Established horizontal and vertical layout as well as pavement design and typical sections. Prepared construction quantity takeoffs and cost estimate. Developed design schedule.

Hooksett Land Development, LLC, Benton Road at NH Route 28 and Martins Ferry Road at Benton Road, Hooksett, New Hampshire. Developed construction documents from preliminary to final design. Established horizontal and vertical layout as well as pavement design and typical sections. Prepared construction quantity takeoffs and cost estimate. Performed construction inspections.

Vinco Properties, Inc., Route 140/ North Street/ Chestnut Street, Foxborough, Massachusetts. Developed construction documents. Established horizontal and vertical layout as well as pavement design and typical sections. Prepared construction quantity takeoffs and cost estimate.



Yong Cao, PhD, PE, PTOE

Traffic/Signage/Pavement Markings (2A)

Dr. Cao has been involved with civil engineering design and research for 18 years. His experience includes traffic analysis and design, highway/roadway design and safety, infrastructure rehabilitation and maintenance, driver behavior and performance. He has worked on a broad range of design and research traffic and transportation engineering projects throughout Florida, Vermont, Connecticut, Massachusetts, and Rhode Island. He has practical knowledge in many transportation/traffic-related software packages including AutoCAD, AutoDesk Map, AutoDesk Land Desktop, MicroStation, Inroads, Geopak, AutoTURN, Synchro, Sidra, HCS, TransCAD, GPS Travel Time, PC-Travel, Hydroflow, and Micro PAVER.

Massachusetts Department of Transportation, Canal Street Improvement, Salem, Massachusetts. Assessed existing roadway network and traffic conditions including traffic volume count data reviewing, traffic accident analysis, traffic signal warrant analysis, and traffic capacity analysis.

Massachusetts Department of Transportation, I-93 Tri-Town Interchange Study, Andover, Tewksbury, and Wilmington, Massachusetts. Assessed with existing roadway network and traffic conditions including review of traffic volume count data, traffic accident analysis, traffic signal warrant analysis, and traffic capacity analysis.

Massachusetts Department of Transportation, Route 9/Oak Street Intersection Redesign, Natick, Massachusetts. Conducted a traffic analysis and impact study for the Route 9 - Oak Street intersection redesign. Performed an operational review and analysis of proposed intersection improvement and redesign. Work included the analysis of the proposed project concept with regard to traffic operations and safety, as well as providing other layout recommendations.

Town of Acton, West Acton Village Traffic Impact and Assessment Study, Acton, Massachusetts. Reviewed existing traffic and roadway condition, estimated the additional traffic generated by the proposed project, and conducted traffic impact and parking analysis.

Connecticut Department of Transportation, Buckland Area Transportation Study (Arterial Speed Study), South Windsor, Manchester, and East Hartford, Connecticut. Collected travel time and delay data for 18 streets/roads of the three towns using GPS Travel Time, and conducted analysis and generated reports using PC-Travel.

Education

PhD, Industrial Engineering, University of Rhode Island, Kingston, 2004

MS, Civil and Environmental Engineering, University of Rhode Island, Kingston, 1999

BS, Civil Engineering, Xi'an University of Architecture and Technology, China, 1991

Registration

Professional Traffic Operations Engineer™, #2576

Professional Engineer, Connecticut, #PEN.0026216

Years of Experience: 18

Rhode Island Department of Transportation, Bridge Scour Management System (BSMS) Database, Rhode Island. Participate in BSMS database enhancement and integrating HyRisk into BSMS.

Connecticut Department of Transportation, I-91 Exit 8 Improvements. Provided preliminary design of alignment, plans, profile, and cost estimate.

Town of Greenwich, Rye Lake Traffic Improvements, Greenwich, Connecticut. Design engineer for the final design of the Rye Lake and King Street roundabout, includes vertical and horizontal alignment, signs and pavement markings, installation of new curbs and sidewalks. and cost estimate.

Town of Greenwich, South Water Street and Mead Avenue Roundabout Improvements, Greenwich, Connecticut. Provided final design for the roundabout, included improvements to vertical and horizontal alignment, signs and pavement markings, drainage improvements, installation of new curbs and sidewalks.

Town of Vernon, Village Street Reconstruction, Vernon, Connecticut. Provided final design for the improvements to vertical and horizontal alignment, signs and pavement markings, drainage, curbs and sidewalks, and cost estimate.

3R Improvement of Harris Avenue and Railroad Street, Woonsocket, Rhode Island. Design engineer for vertical/horizontal alignment controls, cross sections, layout and grading, traffic control plans, signing and stripping, drainage design, and cost estimates.



Yong Cao, PhD, PE, PTOE

Post Road Reconstruction, North Kingstown, Rhode Island. Design engineer for roadway improvement design. The project includes vertical and horizontal alignment development, cross sections, drainage design, and cost estimate.

Pavement Inspection and Performance Management, Woonsocket, Rhode Island, and Fall River, Massachusetts. Engineer for inspecting pavement condition for the two cities and used MicroPaver to conduct pavement performance management.

Route 10 Improvements, Cranston and Providence, Rhode Island. Design engineer for roadway and intersection design, establish vertical/horizontal alignment controls, develop cross sections, layout and grading, traffic control plans, signing and stripping, drainage design, and cost estimates.

Bald Hill Road Reconstruction, Warwick and West Warwick, Rhode Island. Design engineer for roadway improvement design. The project includes vertical and horizontal alignment development, cross sections, drainage design, intersection safety, signs and pavement marking, installation of new curbs and sidewalks, and cost estimate.

City of Salem, Canal Street Improvement, Salem, Massachusetts. Assessed existing roadway network and traffic conditions including traffic volume count data reviewing, traffic accident analysis, traffic signal warrant analysis, and traffic capacity analysis.

Towns of Andover, Tewksbury, and Wilmington, I-93 Tri-Town Interchange Study, Andover, Tewksbury, and Wilmington, Massachusetts. Assessed with existing roadway network and traffic conditions including review of traffic volume count data, traffic accident analysis, traffic signal warrant analysis, and traffic capacity analysis.

Town of Natick, Route 9/Oak Street Intersection Redesign, Natick, Massachusetts. Conducted a traffic analysis and impact study for the Route 9 - Oak Street intersection redesign. Performed an operational review and analysis of proposed intersection improvement and redesign. Work included the analysis of the proposed project concept with regard to traffic operations and safety, as well as providing other layout recommendations. Simulations of the project operations for each concept were developed using Synchro. Based on the results of the evaluation, a simulation analysis of a

preferred option was prepared and presented to MHD and the public.

Town of Branford, Traffic Study, Branford, Connecticut.Conducted town wide zoning and parking analysis.

Connecticut Department of Transportation, Buckland Area Transportation Study (Arterial Speed Study), South Windsor, Manchester, and East Hartford, Connecticut. Collected travel time and delay data for 18 streets/roads of the three towns using GPS Travel Time, and conducted analysis and generated reports using PC-Travel.

Rhode Island Department of Transportation and University of Rhode Island Transportation Center, Employing Graphics to Aid Message Display on Dynamic Message Signs, Rhode Island. Research engineer to investigate employing graphics on DMSs to aid and enhance drivers' perception of displayed information on DMSs to improve driving safe and traffic mobility.

Rhode Island Department of Transportation, Design of Experiment Approach to Study the Display of Variable Message Signs. Graduate research assistant involved in laboratory driving simulation-based experiments that investigated several display factors of variable message signs (VMS) and their influences on driving safety.

Rhode Island Department of Transportation, Effects of Road Marking Luminance Contrast on Driving Safety, Rhode Island. Graduate research assistant for the study of the effects of road marking luminance contrast on driving performance to help determining the time to repair/repaint road marking based on its luminance contrast condition.

University of Connecticut. North Eagleville Road Pedestrian Sidewalk Safety Plan, Storrs, Connecticut. Collected pedestrian data and roadside lighting levels, design traffic signs to improve pedestrian safety.

Connecticut Department of Transportation, Statewide Rest Area and Service Plaza Improvements, Connecticut. Provided planning and conceptual design of the statewide rest areas and service plazas to improve safety and capacity.



Jason Sobel, PE

Traffic/Signage/Pavement Markings (2A)

Mr. Sobel's experience includes preparing traffic impact study reports for new development projects, performing transportation safety peer reviews, developing plans for roadway mitigation, preparing traffic management plans, performing capacity analyses at signalized intersections and coordinated signal systems, and preparing traffic signal plans and performing traffic signal inspections. He is proficient in the use of AutoCAD, AutoDesk Land Desktop, Synchro and SimTraffic traffic analysis package, Highway Capacity Software, and the Vissim microsimulation software.

MassDOT, Route 2 Concord Rotary Interchange, Concord, Massachusetts. Lead traffic engineer for 25% design for reconstruction and removal of the Concord Rotary. Evaluated three interchange alternatives with respect to vehicular traffic operations and bicycle and pedestrian accommodations. Designed coordinated traffic signal system at three new intersections. Recommended updated traffic signal timings and coordination for existing signalized locations along a high-speed roadway corridor. Developed 3D microsimulation model to present alternatives to the public.

MassDOT, Highway Division, I-93 Tri-Town Interchange and Add-a-Lane, Andover, Tewksbury, and Wilmington, Massachusetts. Lead traffic engineer for evaluation and design of proposed interchange alternatives. Prepared Synchro/SimTraffic analysis network for entire project area. Applied highway capacity analysis to I-93 and the interchange of I-93/I-495. Prepared 3D Vissim microsimulation models of alternatives. This project will relieve traffic congestion and provide opportunities for over one million square feet of new economic development.

MassDOT, Highway Division, I-95 Canton Interchange Evaluation, Canton and Dedham, Massachusetts. Lead traffic engineer for evaluation and design of the coordinated traffic signal system on Dedham Street proposed as part of the new I-95 interchange design. Prepared transportation portions of the functional design report and draft environmental impact report. Applied Synchro/SimTraffic software to optimize traffic signal system.

Antares Development Corporation, Yale & Towne Development Transportation Study, Stamford, Connecticut. Providing traffic engineering services for this large mixed-use transit-oriented urban redevelopment project. Projected future vehicular demand, estimated future levels of transit use, analyzed traffic operations of background and proposed conditions at more than

Education

BS, Civil and Environmental Engineering, University of Vermont, Burlington, 2002

Registration

Professional Engineer, Massachusetts, #47550

Years of Experience: 8

30 signalized and unsignalized intersections. Recommended roadway and intersection improvements to enhance traffic operations.

Town of Lexington, Lowell Street/Maple Street (Route 2A), Lexington, Massachusetts. Designed traffic signal improvements to increase traffic capacity. Designed traffic management plans for appropriate construction phasing.

Town of Arlington, Pleasant Street (Route 60)/Irving Street, Arlington, Massachusetts. Determined deficiencies at existing traffic signal. Recommended and designed traffic signal improvements to enhance the flow of traffic.

City of Salem, On-Call Traffic Engineering Contract, Salem, Massachusetts. Evaluated the need for a new traffic control signal on North Street, within an existing coordinated signal corridor.

Town of Belmont, Pleasant Street (Route 60), Belmont, Massachusetts. Developed roadway reconstruction plans from 25% to 100% level for submission to MassDOT, including drainage and utility plans, grading plans, cross sections, and curb tie and alignment plans. Prepared detailed construction cost estimate.

Riverview Place, LLC, Riverview Place, Salem, Massachusetts. Prepared traffic impact and assessment study for residential development project. Evaluated proposed project with respect to consistency with the neighborhood master plan for the North River Canal corridor. Recommended off-site mitigation measures to enhance safety and improve traffic operating conditions.

New Jersey Turnpike Authority, Interchange 10, Edison and Perth Amboy, New Jersey. Prepared 3D Vissim microsimulation traffic model for existing and future conditions. Calibrated existing conditions model to field observations. Evaluated several future toll booth configuration alternatives with regard to traffic operations.



Jason Sobel, PE

Vermont Agency of Transportation, Main Street (Route 5), Brattleboro, Vermont. Reviewed traffic signal layout, traffic signal phasing and timing data, traffic signal operational notes, roadway pavement markings, and signing sheets during the quality control/assurance process prior to prefinal submittal to VTrans. Prepared special provisions for video camera detection, radio interconnect, and railroad pre-emption equipment.

Vermont Agency of Transportation, I-89 Exit 15, Winooski, Vermont. Evaluated existing traffic operations for I-89 Exit 15 on-ramp, off-ramp, and adjacent intersections along Vermont Route 15. Analyzed and designed traffic signal improvements based on future year traffic volume projections to facilitate traffic flow along Route 15, minimize queuing onto the I-89 mainline, and enhance pedestrian safety.

Antares Development Corporation, Stamford Transportation Center Pedestrian Study, Stamford, Connecticut. Performed pedestrian counts and observations at critical locations within the Stamford Transportation Center (a regional multimodal transportation facility). Evaluated existing pedestrian facilities based on peak conditions. Estimated future pedestrian demand at the Transportation Center based on future development projects. Determined existing and future levels of service at staircases, walkways, and doorways. Recommended improvements to facilitate pedestrian flow.

Antares Development Corporation, Gateway Office Development, Stamford, Connecticut. Prepared traffic impact and access study for a 700,000-square-foot office development project, located adjacent to the Stamford Transportation Center, the busiest train/bus station in Connecticut. Projected future traffic and pedestrian volumes and conducted research on similar projects to estimate future public transportation ridership levels. Evaluated existing and future levels of service and recommended roadway and traffic signal mitigation to improve traffic flow.

Massachusetts Bay Transportation Authority, Urban Ring Major Investment Transit Study, Metropolitan Boston, Massachusetts. Contributed to the circumferential Urban Ring RDIER/DEIS study, encompassing six cities/towns around metropolitan Boston. Synchro/ SimTraffic intersection analysis to determine future conditions in the Longwood Medical area. Synchro/

SimTraffic arterial analysis to estimate and compare travel times for several future alternatives. Conceptual design on Ruggles Street to provide exclusive bus lanes and queue jump lanes for BRT vehicles.

A.W. Perry, Inc., Hingham Street, Rockland, Massachusetts. Prepared plans for roadway widening for submission to MassDOT. Performed coordinated traffic signal analysis for four signalized intersections. Designed traffic signal plans based on coordinated analysis. Performed traffic signal inspection.

Samuels & Associates, Inc., Hingham Shipyard, Hingham, Massachusetts. Prepared traffic impact study for large mixed-use development project that included retail, office, and residential components, as well as a large parking area for the MBTA commuter boat to Boston. Identified required off-site mitigation, performed coordinated traffic signal analysis for five intersections in Hingham and for seven intersections in Weymouth. Designed traffic signal plans for all locations. Identified on-site traffic calming measures. Designed roundabout along primary driveway.

First Republic Corporation of America, Waltham Business Center, Waltham, Massachusetts. Prepared traffic impact study for the redevelopment of the former Waltham Watch Factory. Performed capacity analysis for large number of study intersections. Developed transportation demand management program. Designed traffic signal improvements for off-site mitigation.

Eastern Development, Inc., Chelsea Commons, Chelsea, Massachusetts. Prepared traffic impact study for mixed-use development project (Home Depot, other commercial space, residential apartment units) for submission to the city of Chelsea. Prepared traffic portion of the environmental impact report. Performed gap study at site driveway. Recommended and designed off-site mitigation, including design of traffic signal control at two intersections, full-depth reconstruction of roadway in an urban setting, designed profile, cross section, drainage, and curb tie and alignment of roadway. Designed traffic calming curb extensions on nearby residential roadways. Redesigned highway off-ramp at intersection of local roadway to allow for pedestrian accommodations.



Dennis Flynn, PE, PTOE

Traffic/Signage/Pavement Markings (2C)

Mr. Flynn is a transportation engineer experienced in traffic engineering, including traffic signal analysis and design. He has design and construction engineering experience in traffic signal systems, including closed loop signal systems. His design experience also includes signage and pavement markings, traffic calming, intelligent transportation systems and traffic management plans. Mr. Flynn also has experience in designing horizontal and vertical geometries, including creating cross sections and profiles. He is proficient in the use of SYNCHRO/SIMTRAFFIC, HCS+, aaSIDRA, AutoCAD and Land Development.

MassDOT, Route 2 Concord Rotary Interchange, Concord, Massachusetts. Assisted with the 25% design for reconstruction and removal of the rotary. Work included the evaluation of three interchange alternatives with respect to vehicular traffic operations and bicycle and pedestrian accommodations. The work also included the design of coordinated traffic signal systems at three new intersections. Updated traffic signal timings and coordination for existing signalized locations along a high-speed arterial corridor were recommended. Three dimensional microsimulation models were developed to present alternatives to the public.

MassDOT, I-495 Lowell Bridge Bundle, Lowell Massachusetts. Prepared the traffic management plan (TMP) to be used on this design-build bridge reconstruction project along a major interstate that included a highway cross over and detours. Work included evaluation and analysis of traffic operations during the different construction stages, as well as development of appropriate temporary improvements necessary to mitigate any impacts. Work also included preparation of plans and documents required to implement the TMP and the proposed mitigation improvements.

Town of Natick, Route 9 and Oak Street Intersection Improvements, Natick, Massachusetts. Performed traffic capacity and operations evaluation of multiphase signalized intersection along a major arterial. Analyzed existing conditions and proposed improvement scenarios using capacity and simulation tools. Evaluated coordination with adjacent traffic signals.

MassDOT, Route 8/57 Bridge, Sandisfield, Massachusetts. Prepared traffic management plans for this bridge reconstruction with challenging roadway geometry and high truck traffic. Work included design of a temporary traffic signal to accommodate alternat-

Education

MS, Civil Engineering, Northeastern University, 2007

BS, Civil Engineering, Pennsylvania State University, 1998

Registration

Professional Traffic Operations Engineer™, National Professional Engineer, Massachusetts, #46309,

Years of Experience: 12

ing one-way traffic over the bridge during construction. Work also included preparation of a functional design report, which presented the traffic signal analysis and proposed project improvements.

Town of Harvard, Traffic Peer Review, Harvard, Massachusetts. Project engineer for peer review services of the 188-200 Ayer Road development project conducted by Conley Associates. Managing review of traffic volumes, trip generation and distribution, intersection geometry and capacity analysis, accidents, access, sight distance, and make recommendations.

MassDOT, Pelham Road Bridge, Amherst, Massachusetts. Developed traffic management plans for each construction stage of the proposed bridge reconstruction. Work included preparation of traffic signal plans to accommodate alternating one-way traffic over the bridge during construction. Work also included gathering pertinent traffic data to perform an analysis of the signalized operations. The results of the analysis were summarized in a functional design report, which outlined proposed project improvements.

Massachusetts Division of Capital Asset Management, Federal Street Traffic Data Collection, Salem, Massachusetts. Project manager for collection of traffic data at two locations along Federal Street and preparation of a technical memorandum.

Massachusetts Division of Capital Asset Management, Salem Courthouse Traffic Signals, Salem, Massachusetts. Conducted a review of traffic and the design of traffic signals as part of the development of a new courthouse. The new development required removal of a section of roadway that was part of an interchange system. Managed analysis of impacts of rerouting traffic redistributing trips due to reconfiguration of a



Dennis Flynn, PE, PTOE

new interchange system. Managed the design of a new traffic signal system that was interconnected with an existing system along North Street (Route 114) in Salem.

City of Salem, North Street (Route 114), Salem, Massachusetts. Prepared traffic plans, specifications and estimate for the reconstruction of the Route 114 corridor from the Salem-Peabody town line to the city center. Work included designing two fully actuated signals, three pedestrian signals and a fire station signal, and interconnecting all of the signals to an existing city master controller. The work also included preparing traffic management plans, as well as revised pavement markings and signing throughout the corridor.

Vermont Agency of Transportation, US Route 2, VT Route 117 Roundabout Improvements Analysis, Richmond, Vermont. Performed an operational review and analysis of a concept plan that proposed a roundabout with complex geometry at the intersections of US Route 2, VT Route 117 and I-89 NB Ramp. Work included the analysis of the proposed project concept with regards to traffic operations and safety, as well as providing other layout recommendations. Simulations of the project operations for each concept were developed using Vissim, a 3-D traffic simulation software. Based on the results of the evaluation, a simulation analysis of a preferred double roundabout option was prepared and presented to VTrans staff and the public

City of Cambridge, Linear Park Crossing Improvements, Cambridge, Massachusetts. Prepared the 25% Design Documents for reconstruction of the Massachusetts Avenue/Cedar Street intersection in conjunction with the Linear Park Crossing Improvements of Massachusetts Avenue. Prepared a Functional Design Report, including traffic capacity analysis, safety evaluation and pedestrian and bicycle operations and improvements. Work also included 25% level design plans, which included geometric modifications and traffic signal improvements.

City of Cambridge, Blanchard Road and Grove Street Roundabout, Cambridge, Massachusetts. Prepared a traffic capacity analysis for a proposed roundabout at the Blanchard Road/Grove Street intersection. Work included a comparative analysis between the existing unsignalized T-intersection and the proposed roundabout. A simulation of the roundabout was prepared and presented at a public meeting.

Massachusetts Bay Transportation Authority, Urban Ring Phase 2 RDEIR/DEIS, Boston, Massachusetts.

Assisted in the preparation of the draft environmental impact reports and statements (RDEIR/DEIS) for the Bus Rapid Transit phase of the project, which proposes to provide improved public transit access along a 15-mile corridor outside the Boston central core. Assisted in the preparation of traffic analysis, including modeling traffic signal and circulation strategies. Assisted in the analysis and assessment of traffic signal bus priority strategies for transit improvements at signalized intersections. Also assisted in the development of proposed alternative alignments and station locations.

Town of Milton, Brush Hill Road Intersection, Milton, Massachusetts. Conducted a traffic study for the area around the Brush Hill Road/Neponset Valley Parkway intersection, in conjunction with the reconstruction of the intersection. Evaluated the traffic flow characteristics through the area to determine if Brush Hill Road was being used primarily as a cut-through roadway. Analyzed travel speed, travel time and accident data as well as the operational capacity of the study intersection.

MassDOT, I-93/Route 125/Ballardvale Street Interchange Improvements, Wilmington, Massachusetts. Participated in improvements including signalization and addition of a ramp at the I-93/Route 125 interchange and construction of a new traffic signal at the Route 125/Ballardvale Street intersection. Prepared traffic plans and traffic management plans, and designed traffic signals and sign improvements in conjunction with the interchange improvements.

Antares Development Corporation, Gateway Office Development, Stamford, Connecticut. Assisted in the preparation of the traffic impact and access study for a 700,000-square-foot office development project, located adjacent to the Stamford Transportation Center, which is the busiest train/bus station in Connecticut. Work included evaluating the projected future traffic and pedestrian volumes and researching similar projects to estimate future public transportation ridership levels. Reviewed the evaluation of existing and future levels of service and the recommendations for roadway and traffic signal mitigation to improve traffic flow.

Town of Medway, Xtra Mart Gas Station Traffic Impact Study, Medway, Massachusetts. Project manager for a traffic impact and assessment to evaluate and summarize impacts of the proposed development on existing roadway network. Managing development of conceptual measures to improve traffic operations.



Susan Hirl, EIT

Traffic/Signage/Pavement Markings (2C)

Ms. Hirl has 16 years of experience in transportation, traffic, and environmental engineering, with special expertise in environmental permitting, traffic, noise, and air quality analyses for permit approvals. She is proficient in the use of SYNCHRO/SimTraffic, HCS+, AutoCAD, PowerPoint, MS Project and Access, CAL3QHC, MOBILE5, MOBILE6, TNM, STAMINA, and SCREEN3.

City of Cambridge Department of Transportation and Traffic, Flagstaff Park Crossing Improvements, Cambridge, Massachusetts. Prepared the functional design report in support of proposed transportation improvements for Flagstaff Park. Performed intersection capacity analysis of the study area for existing and proposed conditions.

Massachusetts Executive Office of Transportation, North Allston Multimodal Station, Allston/Brighton, Massachusetts. Performed a screening analysis of locations for a proposed multimodal commuter rail station to serve the Allston and Brighton neighborhoods of Boston. Prepared the study report, graphics, and Powerpoint presentations for public hearings.

Massachusetts Executive Office of Transportation, The Urban Ring, Boston, Cambridge, Massachusetts. Working with a team of engineers, performed capacity analysis for existing and future conditions of a transportation study area of 200 intersections in eastern Massachusetts for a proposed bus rapid transit (BRT) project. Collected and analyzed travel time data for various routes throughout the study area.

Florida Department of Transportation, Central Florida Commuter Rail Transit North/South Corridor Project, Florida. Revised the environmental assessment to include two new stations for a proposed commuter rail line in central Florida.

Florida Department of Transportation, S-Line Grade Crossings: General Assessment of Potential Transportation and Safety Impacts of CSXT Freight Relocation, Florida. Performed traffic analysis of 20 grade crossing locations and determined traffic impacts due to relocation of freight operations to the S-Line rail system.

Plainville Planning Board, Plainville, Massachusetts. Performed peer reviews of traffic impact studies for

Education

BS, Civil Engineering, Northeastern University, 1993

Registration

Engineer-in-Training, Massachusetts

Years of Experience: 16

various land development projects in Plainville.

Rockport Chamber Music Festival, Rockport, Massachusetts. Performed a parking analysis for a proposed music hall in Rockport. Collected parking data and calculated utilization rates, summarized parking data, and wrote the parking analysis technical memorandum.

MassDOT, Route 1A Footprint Bridge Study, Attleboro, Massachusetts. Performed a weave analysis of Route 1A in the project area and summarized results in a technical memorandum.

Florida Department of Transportation, Central Florida Commuter Rail Transit North/South Corridor Project, Florida. Prepared the transportation section of the supplemental environmental assessment for a proposed commuter rail line in central Florida.

Pioneer Valley Transit Authority, Westfield Multimodal Transportation Center, Westfield, Massachusetts. Performed a traffic impact and assessment study (TIAS) for a proposed multimodal transportation center. Collected traffic data, developed traffic networks, and performed capacity analysis of six intersections in the study area.

Connecticut Department of Transportation, Buckland Area Transportation Study, Manchester and South Windsor, Connecticut. Prepared an areawide transportation study of the Buckland area. Performed capacity analysis for existing and future no build conditions of the entire study area, including 47 intersections, 16 arterials, 5 segments of interstate highway, and 10 highway ramps.



Katherine Keegan, PE

Pavement Design

Ms. Keegan is AECOM's National Pavement Management Director located in the Concord, MA office. She is a senior engineer with 15 years of experience and is responsible for project management, engineering, and quality assurance in pavement management, design, rehabilitation, and paving materials projects for both roadways and airports. She is well versed in design standards and software including AASHTO, FAA, and DOD standards. She has experience with several pavement management software programs and has managed projects of various size and scope ranging from general aviation to large commercial airfields. Ms. Keegan has worked with airport managers and engineers in developing specialized analyses and criteria for airfield traffic modeling, FOD assessment, and capital improvement program development. Ms. Keegan has experience with several pavement management software programs including the industry standard MicroPAVER. She has worked with airport managers and road engineers in developing specialized analyses and criteria for traffic modeling, foreign object damage assessment, and capital improvement program development. Ms. Keegan has utilized pavement management tools to work with pavement owners and various stakeholders to improve capital budget allocation.

City of Salem, Canal Street Reconstruction, Salem, Massachusetts. Provide technical expert review of field investigation plan for pavement evaluation and resultant pavement recommendations in accordance with AASHTO design standards.

Massachusetts Department of Transportation, Deerfield River Bridge Replacement, Massachusetts.

Provide quality assurance review of pavement design for temporary pavement, reconstructed pavement and rehabilitated pavement between two main bridge spans in accordance with MassDOT pavement design standards.

City of Durham, Pavement Management System Update, Durham, North Carolina. Project manager for visual condition surveys, pavement management system update and maintenance and rehabilitation recommendations.

Town of Groton, Pavement Management Implementation, Groton, Connecticut. Project manager for MicroPAVER pavement management system implementation including work history review, condition inspection, database customization, prioritized rehabilitation plan and presentation of plan to the town council.

Education

MEng, Pavement Engineering, Carleton University, 1998

BEng, Civil Engineering, Carleton University, 1994

Registration

Professional Engineer, Maryland, #34679, 2007 Professional Engineer, Ontario, #90432980,

Years of Experience: 15

Carroll County, Pavement Rehabilitation and Design Recommendations, Carroll County, Maryland. Senior engineer responsible for data collection, evaluation and development of rehabilitation recommendations in accordance with AASHTO design standards.

Federal Emergency Management Agency, Jefferson Parish Pavement Condition Technical Review, New Orleans, Louisiana. Provide technical expert review of pavement management and evaluation reports prepared by a consultant documenting the impact of flooding and construction loads on pavement condition for support in arbitration.

City of Indianapolis, Marion County Thoroughfares Pavement Management, Indianapolis, Indiana. Provide quality assurance and data management for data collection in accordance with ASTM for PCI for over 1100 miles of roadway pavement. Develop requirements for data collection software and manage the development of the software.

Port Authority of New York and New Jersey, George Washington Bridge Pavement Management System Implementation, New York and New Jersey. Project manager for PMS implementation at the GWB, including all roads within the clients jurisdiction. Roadways and ramps on-grade and the main bridge span's surface wearing course were included in the implementation. The PMS was used to develop 5-year rehabilitation recommendations.

City of Durham, Pavement Rehabilitation Recommendations and Construction Management, Durham, North Carolina. Developed pavement repair protocols, field data collection procedures and handheld data collection software requirements to determine rehabilitation recommendations for 20 miles of city roads. Developed cost estimates for bid documents. Provided support through construction process to the CM team.



Katherine Keegan, PE

US Federal Highway Administration (FHWA), Eastern Federal Lands Highway Division (EFLHD) George Washington Memorial Parkway Pavement Evaluation, Virginia. Project manager and senior pavement engineer responsible for coordination of field activities, data evaluation and pavement design in accordance with Eastern Federal Lands Highway Division standards. Condition data was collected using GPS handheld devices for increased quality control and to provide color coded maps of condition and repair recommendations. Pavement design was completed in accordance with AASHTO, FHWA and EFLHD guidelines.

Port Authority of New York and New Jersey, Lincoln Tunnel Nondestructive Testing and Evaluation of Precast Concrete Panels, New York and New Jersey. Project manager for evaluation of concrete pavement in a pilot test comparing and evaluating joint load transfer of precast to cast-in place concrete panels. A falling weight deflectometer (FWD) was used in this study.

Frederick County, Pavement Management System Update and Engineering Services, Frederick County, Maryland. Project manager for a pavement management system update, development of prioritized rehabilitation plans, customization of data reports and implementation of a sign inventory management system.

Federal Highway Administration, Long-Term Pavement Performance Technical Services Support Contract, Virginia. Contract manager for \$20 million contract, which included maintenance of subcontracts and invoicing in accordance with FAR guidelines.

Florida Department of Transportation and Florida Turnpike Enterprise, I-595 Corridor Improvements, Florida. Provide quality assurance review of pavement design for multi-million dollar design-build effort in south Florida. Ensure compliance with applicable design standards and optimization of designs in accordance with project metrics.

District Department of Transportation and Federal Highway Administration, 11th Street Bridge Design-Build, Washington, DC. Prepare pavement designs and associated design reports. Present designs to client stakeholders. Ensure compliance with applicable design standards and optimization of designs in accordance with project metrics. Assessment and recommendation of most cost-effective alternative based on life-cycle costs to allow for minimizing pavement costs.

Port Authority of New York and New Jersey, John F. Kennedy International Airport Airside and Landside Pavement Management System Updates and 5-Year M&R Plan Development, New York City. Project manager responsible for all aspects of PMS projects at JFK including visual condition inspections, data analysis, rehabilitation plan and budget development.

Andrews AFB, Runway Reconstruction Design, Andrews AFB, Maryland. Provide quality assurance for development of specifications for concrete repairs in support of plate bearing tests to determine subgrade support values for concrete pavement design.

Port Authority of New York and New Jersey, Newark Liberty International Airport Airside and Landside Pavement Management System Updates and 5-Year M&R Plan Development, Newark, New Jersey. Project manager responsible for all aspects of PMS projects at EWR including visual condition inspections, data analysis, rehabilitation plan and budget development.

Port Authority of New York and New Jersey, LaGuardia Airport Airside and Landside Pavement Management System Updates and 5-Year M&R Plan Development, New York City. Project manager responsible for all aspects of PMS projects at LGA including visual condition inspections, data analysis, rehabilitation plan and budget development.

Maryland Aviation Administration, BWI Courtyard Improvements Review, Baltimore, Maryland. Project manager for review of design and construction documents and procedures for the BWI Customer Service Building courtyard roadway pavement to determine the reason for early deterioration. Managing preparation of a letter report detailing the reasons for the deterioration, recommendations for repairs, and a review of life-cycle costs for recommendations provided by the design consultant.

Maryland Aviation Administration, B/C Apron Rehabilitation Phase 2 Study, Baltimore, Maryland. Project manager for review of the P401 specification and historical records of mix use to determine the surface and base course mix type for this contract and the inclusion of the RAP.

Maryland Aviation Administration, Baltimore/Washington Thurgood Marshall International Airport CIP Project Pavement Evaluations, Baltimore, Maryland. Project manager for an evaluation of select airside pavements and development of detailed pavement rehabilitation recommendations and designs.



Stephen Cartwright, PLS

Right-of-Way

Mr. Cartwright is proficient in civil engineering and land surveying, both in the public and private sectors. Responsibilities have included site investigation and evaluation, engineering design, preparation of contract drawings and specifications, construction cost estimates, resident engineering for roadway and utility construction, on-site sanitary and drainage systems, and materials testing. He also has extensive experience in boundary, topographic, and construction control surveys.

Massachusetts Highway Department (MassHighway), Statewide Bridge Rehabilitation and Replacement Program, Lowell, MA. As Project Surveyor, responsible for utility, deed and right of way investigations, existing conditions survey, property line analysis and the preparation of taking plans to accompany the highway modifications. Project required the demolition and construction of a three-span continuous structure carrying vehicular and pedestrian traffic over the Massachusetts Bay Transportation Authority and B&M railroads.

Massachusetts Highway Department (MassHighway), Statewide Bridge Rehabilitation and Replacement Program, Chicopee, MA. As Project Surveyor, responsible for utility, deed and right of way investigations, existing conditions survey, and property line analysis. Project required the demolition and construction of a single-span structure carrying vehicular and pedestrian traffic over a canal. Project also required the installation of a temporary roadway and bridge to maintain traffic into an adjacent industrial park.

Massachusetts Highway Department (MassHighway), Statewide Bridge Rehabilitation and Replacement Program, Brockton, MA. As Project Engineer, responsible for the project civil design from award to submission of plans, specifications, and estimate. This included site investigation, coordination of boring and hazardous material testing programs, and survey and coordination of highway modifications. Project required the demolition and construction of a single-span structure carrying vehicular and pedestrian traffic over a waterway subjected to flooding. Design of the substructure and superstructure was performed in accordance with AASHTO and Department Standards utilizing SI (metric) units.

City of Boston Department of Public Works (DPW), Western Avenue Reconstruction, Boston, MA. As Project Engineer, responsible for the design for the re-

Education

BS, Civil Engineering Technology, Wentworth Institute of Technology, Boston, MA, 1975

AS, Civil Engineering Technology, Wentworth Institute of Technology, Boston, MA, 1972

Registration

Professional Land Surveyor, MA, #37041

Years of Experience: 35

construction of portions of Western Avenue, including drainage, roadway, and sidewalk improvements.

Nantucket Department of Public Works (DPW), Francis Street Reconstruction, Nantucket, MA. As Project Engineer/Resident Engineer, responsible for the design and resident construction engineering, including drainage, utility, roadway, and sidewalk improvements. Also responsible for the design and resident overview of construction to portions of the Surfside Bicycle Path along with various other public works projects.

Massachusetts Bay Transportation Authority (MBTA), Haverhill Main Line Railroad Rehabilitation Program, Haverhill, MA. As Project Engineer, responsible for coordinating design efforts for the rehabilitation of approximately 16 miles of commuter rail. Included in the design effort is accumulating data with reference to existing track conditions, identifying public and private utilities that cross the right-of-way, evaluating the impact on existing bridges and culverts, rehabilitating approximately 18 grade crossings, and mitigating wetland issues that are anticipated throughout the program.

Massachusetts Bay Transportation Authority, (MBTA) Haverhill Main Line Railroad Rehabilitation Program, Haverhill, MA. As Project Engineer, responsible for the construction contract administration for the reconstruction of the Bradford and Lawrence Commuter Rail Stations, including reviewing contractor submittals, change order requests and attending job field meetings.

Massachusetts Bay Transportation Authority, (MBTA)/ Amtrak, Route 128 Intermodal Facility, Westwood/ Dedham, MA. Engineer for this new intermodal facility located in suburban Boston. The project is being



Stephen Cartwright, PLS

developed as a design, build, operate, and maintain (DBOM) project, and is composed of a 2,800-car parking garage, an MBTA commuter rail station, an Amtrak high-speed rail station, a pedestrian overpass, and new passenger platforms. The new facility will incorporate intermodal activities and operations, including bus, commuter rail, and Amtrak functions. In addition, the facility accommodates kiss-and-ride, park-andride, and short- and long-term parking for commuters and passengers utilizing the future high speed rail line to New York and Washington. As Prime Consultant, AECOM is providing complete architectural, project management, structural, environmental planning, community outreach, and civil engineering services as members of a design-build team to Perini Corporation on behalf of the MBTA.

Massachusetts Port Authority (Massport), Container Processing Gate Facility, Conley Terminal, Boston, MA. As Resident Engineer, responsible for providing resident engineering services for the construction of improvements to a 20-acre, state-of-the-art container freight processing facility along with 20,000 sq. ft. administration building, including coordination with in-house design personnel and subconsultants, administration of construction activities, including shop drawings, project construction meetings, payment requisitions, and change orders.

Town of Norfolk, Planning Board Consultant, Norfolk, MA. As Project Manager, responsible for providing engineering consultation on behalf of the Planning Board in the review of both residential and commercial development projects. Performed reviews of both Preliminary and Definitive Subdivisions, "Form A" Plans and Site Plans, to ensure developers adherence to both the Town's Zoning By-Laws and the Planning Board's Rules and Regulations. Conducted site inspections for definitive subdivisions and commercial development projects, including inspection reports of construction deficiencies. Prepared detailed construction cost estimates for use in bonding determinations, bond reductions, and final acceptance of the work. Assisted the Planning Board in a program of updating their Rules and Regulations.

Town of Pembroke, Planning Board Consultant, Pembroke, MA. As Project Manager, responsible for providing engineering consultation on behalf of the Planning Board in the review of both residential and commercial development projects. Performed reviews of both Preliminary and Definitive Subdivisions and site plans to ensure developer's adherence to both the Town's

Zoning By-Laws and the Planning Board's Rules and Regulations Governing The Subdivision of Land. As Resident Engineer, performed scheduled inspections for site preparation, excavation, installation and backfilling of drainage structures and utilities, roadway base construction, placement of pavement, and overall monitoring during construction. In addition, prepared detailed construction cost estimates for use in bonding determinations, bond reductions, and final acceptance of the work.

Town of Easton, Planning Board Consultant, Easton, MA. As Project Manager, responsible for providing engineering consultation on behalf of the Planning Board in the review of residential development projects. Performed reviews of Preliminary Subdivisions to ensure developer's adherence to both the Town's Zoning By-Laws and the Planning Board's Rules and Regulations.

Town of Hanover, Planning Board Consultant, Hanover, MA. As Project Engineer, responsible for providing engineering consultation on behalf of the Planning Board in the review of a complex, commercial development project. As part of a team, was responsible for ensuring the developer's conformance to the Town's Zoning By-Laws and the Planning Board's Rules and Regulations. The combined efforts in this assignment culminated in a comprehensive recommendation to the Board to mitigate the adverse impacts of the proposed commercial project.

Subdivision Development, Southeastern Massachusetts and Cape Cod, MA. As Project Surveyor/ Project Manager, responsible for boundary, topographic, and construction control surveys in the development of various residential and commercial projects, including active interface with both Town Planning Boards and Conservation Commissions.

BayBank, Commercial Building Renovation, Easton, MA. As Project Manager, responsible for preliminary and final site design, including utilities coordination for the renovation of an existing 4,000 sq. ft. commercial building into a satellite branch.

Snow Inn, Warehouse Facility Renovation and Expansion, Harwich, MA. As Project Engineer, responsible for preparation of preliminary and final site design contract documents, for the renovation and expansion of an existing commercial building, into a supermarket with warehousing facilities.



Michael Bisschop, EIT

Right-of-Way

Mr. Bisschop is experienced in all aspects of highway engineering including horizontal and vertical alignments, drainage, traffic control during construction, signage and pavement markings, right-of-way, cost estimating, specifications and preparation of contract documents.

MassDOT, Assabet River Rail Trail, Marlborough/Hudson Massachusetts. Prepared estimate and specifications for conversion of an abandoned railroad right of way into a bike trail. Also prepared right-of-way breakin access plans and written descriptions. Reviewed civil shop drawings as required. Prepared layout alteration plan and instrument for recording at registry of deeds.

MassDOT, Sagamore Rotary Grade Separation, Bourne, Massachusetts. Assisted the project engineer in the preparation of preliminary and final right-of-way plans. Prepared advanced taking plans and written instruments. Prepared quantity estimates and special provisions. Coordinated the preparation and submittal of final contract specification, estimate, and project detail sheets for the roadway portion of this project. Responsible for processing and distributing shop drawings according to specifications. Prepared special provisions for the landscaping portion. Prepared final plans, specifications and estimates for the extra work order as well as the site development for the construction of the proposed visitors center sections of this contract.

City of Haverhill, Riverwalk Construction, Haverhill, Massachusetts. Project engineer for the advancement from preliminary design through PS&E plans for construction of a walking path on the landside of the riverwall along the Merrimack River. Improvements included reconfiguring a municipal parking lot to minimize loss of parking spaces, construction of a landscape atrip, drainage improvements, and street lighting. Also included was preparation of special provisions and a quantity/cost estimate.

MassDOT, Sagamore Visitors Center, Bourne, Massachusetts. Project engineer for the civil site work associated with the visitors center rebid package. Prepared plans as to the civil work relating to the 3,500-square-foot visitors center as well as certain items of work that were left incomplete from the Sagamore Roadway project including the removal of a temporary park-and-ride facility, completion of the permanent park-and-ride facility as well as roadway construction

Education

BS, Civil Engineering, Northeastern University, 1987

Registration

Engineer in Training, Massachusetts

Years of Experience: 22

and street lighting. Responsible for plan preparation, coordinating plan and specifications preparation with other disciplines, quantity and cost estimate and special provisions. Project engineer for construction phase services, including attending meetings, answering questions, and reviewing shop drawings for the project.

Massachusetts Division of Capital Asset Management, North Street, Salem, Massachusetts. Lead design engineer for the relocation of the North Street/Bridge Street ramp system in conjunction with the construction of a new courthouse. Designed a relocated and widened ramp system to accommodate existing traffic from the existing ramp system that was being removed to make room for a new courthouse, prepared final design plans, engineers estimate and special provisions. Responsible for weekly site visits to observe construction methodology for compliance with contract plans and specifications. Provided construction phase services that includes processing and responding to shop drawings received from the contractor and responding to requests for information.

Commonwealth of Massachusetts, Sagamore Eminent Domain, Bourne, Massachusetts. Providing expert testimony for eminent domain acquisition by the state for the Sagamore Rotary project.

MassDOT, Route 44, Plymouth-Carver, Massachusetts. Provided horizontal and vertical geometrics; pavement design, drainage design, design of recharge and detention basins for 7.5 miles of four-lane Route 44 expressway including four interchanges and 1.5 miles of relocated Route 3. Designed a park-and-ride facility; prepared a soils boring program for Section 1 (6.5 miles of roadway including two interchanges and five bridges). Designed special access roads in cranberry bogs; designed grading and extensive traffic control including temporary ramps to be used during construction. Prepared signage and pavement marking plans. Designed mechanically stabilized earthwalls and



Michael Bisschop, EIT

noise barriers. Prepared quantity and cost estimates. Provided construction-phase services that included advice during construction, preparation of right of way and layout plans for conditions that arose during construction, meetings in the field to solve construction conflicts and unforeseen field problems as well as shop drawing review.

MassDOT, Route I-91, Deerfield, Massachusetts.

Project engineer for development of 25% design plan which included horizontal and vertical geometrics for not only the primary roadways but for a temporary bidirectional roadway to be constructed in the median so two lanes of traffic could be maintained at all times. Additional work involved development of superelevation transitions, typical sections for both the main and temporary roadway so that a 70 mph design speed can be maintained, preliminary drainage, preparation of a preliminary quantity/cost estimate, and preparation of special provisions.

MassDOT, Statewide PS&E Plan Review, Massachusetts. Review PS&E design plans for various projects prepared by other consultants firms for consistency with current MassDOT standards. Work includes reviewing and documenting errors and omissions in the contract plans, inconsistencies with the special provisions vs plans, and errors and/or omissions in the estimate.

MassDOT, Bourne-Wareham Bridge, Bourne-Wareham, Massachusetts. Prepared preliminary right-of-way plans. Work included calculation of area for both permanent and temporary easements and the required land takings associated with this bridge widening/replacement project.

Town of Templeton, Reconstruction of Baldwinville Road, Templeton, Massachusetts. Project engineer responsible for development of 25% design plans for reconstruction of approximately 18,000 linear feet of Baldwinville Road. Work includes full depth pavement reconstruction, pavement reclamation, and pavement milling and overlay. The project also includes ADA-compliant sidewalks, drainage modification, traffic management, pavement markings, and signs. Also responsible for the preliminary quantity/cost estimate.

Town of Andover, Bridge Repairs and Safety Improvements, Stevens Street and Balmoral Street, Andover, Massachusetts. Prepared plans, specifications, and quantity/cost estimate for the civil site aspect of the safety improvement project. Work involved drainage

improvements, installation of guard rail and chain link fence, improving handicapped accessibility, and installation of pavement markings.

Town of Weymouth, Gravel Access Road Improvement, Weymouth, Massachusetts. Responsible for responding to civil RFIs, civil-based shop drawings, as well as keeping track of the receipt and distribution of reviewed shop drawings.

MassDOT, Route 125/Ballardvale Street, Wilmington, Massachusetts. Project engineer for development of 25 percent design plans based on the recommended alternative, which included horizontal and vertical geometric, preliminary drainage, and development of typical sections. Assisted with redesign of signals with mast arms to avoid conflict with utility poles relocated by the utility after the initial design.

MassDOT, Route 132 Reconstruction, Barnstable Massachusetts. Prepared 25% special provision and estimate for the reconstruction of 3000 meters of Route 132.

MassDOT, Providence Highway, Dedham, Massachusetts. Project engineer responsible for advancement of the 25 percent design plans to the 75 percent design stage. Work included finalization of horizontal and vertical geometrics, final pavement design, signage and pavement markings, preparation of quantity estimate and special provisions. Also responsible for processing structural and civil shop drawings and responding to RFIs concerning the civil aspects of construction.

MassDOT, Hazard Elimination, Weymouth and Fall River, Massachusetts. Project engineer for design of intersection improvements and hazard elimination at the Route 18 (Main Street) and Winter Street intersection in Weymouth, and the President Avenue (Route 6) and Davol Street (Route 138) intersection in Fall River. Designed horizontal and vertical geometric improvements, pavement and drainage design, and improved signing and pavement markings. Prepared right-ofway and layout plans. Provided construction-phase services, which included field visits and advice during construction and shop drawing review.

Massachusetts Port Authority, Streetlight Inventory, South Boston Massachusetts. Prepared street light inventory plans usable by the client to locate existing street lights. Plans included which circuit and control box the individual light was connected.



Joanne M. Haracz, AICP

Environmental

Ms. Haracz has more than 30 years of experience in land use and environmental planning, impact assessment, permitting, facility siting studies, and natural resource management. She is experienced in Alternatives Analysis and Federal (NEPA) and State environmental impact review procedures, and has prepared Environmental Impact Studies/Assessments for transportation projects under Federal Transit Administration, Federal Highway Administration, Federal Railroad Administration, and Federal Aviation Administration guidelines. Ms. Haracz is also experienced in wetland delineation methodologies and regulatory procedures, and has successfully obtained permits for a number of public infrastructure projects and commercial developments. In addition, Ms. Haracz has experience in public participation, and has served as liaison to the community and public agencies on many projects. Prior to joining the private sector, Ms. Haracz served as a District Conservationist with the USDA Natural Resources Conservation Service where she established a farmland preservation planning program for the Connecticut River Valley in Massachusetts, and provided soil conservation, land management and water quality assistance to private landowners and public entities.

Massachusetts Department of Transportation - Highway Division, Fore River Bridge Replacement, Quincy-Weymouth, MA. As Environmental Task Manager, responsible for managing the NEPA-compliant Environmental Assessment (EA) document and environmental permitting for replacement of the moveable bridge carrying Route 3A over the Fore River. The Federal highway Administration is serving as the lead federal agency. Bascule and lift bridge options are under consideration for this bridge replacement in MassDOT's Accelerated Bridge Program. Key considerations for the EA include impacts associated with dredging and in-water work on essential fish habitat and construction period noise and traffic impacts on the abutting communities.

Massachusetts Department of Transportation-Highway Division, Statewide Environmental Open-End Services. Project Manager for this 3-year, \$1 million contract providing environmental management and permitting services for MassDOT on a task-order basis. Representative tasks include statewide storm water management and stream crossing assistance, wetlands delineation and permitting, hydraulic analysis of bridges in tidal waters, and endangered species

Education

Master of Regional Planning, University of Massachusetts, Amherst, MA 1981

B.S., cum laude, Biology, Boston College, Boston, MA 1975

Registration

American Institute of Certified Planners #6745

Years of Experience: 30

assessment for rail trail development in Dennis and Yarmouth.

Massachusetts Department of Transportation – Highway Division, Conceptual Design and Feasibility Study for a New Route 6 Interchange, Barnstable, MA. As Environmental Task Manager, assisted in the preparation of a technical feasibility study evaluating alternative interchange configurations designed to reduce traffic congestion, and provide strategic access to local industrial development parcels while limiting impacts to residential areas. Alternatives were analyzed relative to land use, environmental, circulation, and economic criteria. Prepared Environmental Notification Form in compliance with Massachusetts Environmental Policy Act regulations.

Massachusetts Department of Transportation-Highway Division, Rest Area Rehabilitation Project, Chelmsford, MA. Permitting Coordinator for the rehabilitation of a rest area and construction of new visitor information center on Interstate 495. Delineated wetlands and obtained Massachusetts Environmental Policy Act approval and an Order of Conditions from the Chelmsford Conservation Commission for the project, which included design of a drainage system in conformance with the Department of Environmental Protection's Stormwater Management Policy.

Massachusetts Bay Transportation Authority (MBTA)/Amtrak, Route 128 Intermodal Facility, Westwood/Dedham, MA. Environmental Task Manager for a new intermodal facility consisting of a 2,800-car parking garage and an MBTA commuter rail and Amtrak High-Speed Rail station which was developed as a Design, Build, Operate, and Maintain project. Prepared the Environmental Assessment/Environmental Impact Report to comply with NEPA and the Massachusetts Environmental policy Act (MEPA). Received a Find-



Joanne M. Haracz, AICP

ing of No Significant Impact (FONSI) from the Federal Railroad Administration, and a Phase I Waiver from the Massachusetts Environmental Policy Act Unit, allowing the construction of the station and platforms to move forward to meet the project's aggressive construction schedule, while environmental work continued on the garage. Coordinated permitting under the Massachusetts Wetlands Protection Act, including compliance with the Department of Environmental Protection's Stormwater Management Policy and the Federal NP-DES general permit for stormwater discharges.

Rhode Island Department of Transportation (RIDOT), Freight Rail Improvement Project, Quonset Point/Davisville to Central Falls, RI. As Environmental Manager, responsible for managing the alternative alignment screening process and the NEPA-compliant Environmental Impact Statement/Major Investment Study for proposed freight rail improvements on 22 miles of the Northeast Corridor, between Quonset Point/Davisville and Central Falls, RI, which obtained a Record of Decision (ROD) from the Federal Highway Administration and Federal Railroad Administration. Also responsible for developing the permitting strategy and preparing permit applications for each of the project's construction contracts, including a RI DEM Application to Alter Freshwater Wetlands, US Army Corps of Engineers 404 permit, and a RIPDES dewatering discharge permit.

Maine Department of Transportation, Acadia Gateway Center, Trenton, ME. Task Manager for the Environmental Assessment of an intermodal transportation and welcome center to serve visitors to Acadia National Park and commuters to Mount Desert Island, and a maintenance facility to serve the Island Explorer bus system, which achieved a Finding of No Significant Impact (FONSI). The project is being developed in cooperation with the Federal Transit Administration and the National Park Service.

MBTA North Shore Transit Improvement Study, Revere to Salem, Massachusetts. As Department Manager, responsible for technical oversight of an Environmental Impact Study (EIS) evaluating transit improvements and alternative alignments for a 9-mile extension of a rapid transit line. Key issues include wetland impacts associated with expansion of the rail corridor through

the Rumney Marsh, a state-designated Area of Critical Environmental Concern (ACEC) and land use and economic development impacts associated with new rapid transit service and station-area development.

Massachusetts Highway Department, I-495 Corridor Study. As Planning Task Manager, responsible for land use and environmental issues associated with proposed multi-modal transportation alternatives for the I-495 corridor, encompassing a 13-community study area, from Westford to Salisbury, MA. Also responsible for development of the transit alternatives to be considered for the corridor.

Massachusetts Bay Transportation Authority (MBTA) Silver Line Phase III. Planning Manager for preparation of an Environmental Impact Statement/Environmental Impact Report under NEPA and the Massachusetts Environmental Policy Act (MEPA) for the Phase III tunnel segment between Washington Street and South Station that connects Phase I and II of the Silver Line Bus Rapid Transit (BRT) system. Key issues include historic and archeological resources, parklands, urban design interface, traffic, and construction impacts. The project will require compliance with Section 4(f)/106 due to cultural resource impact issues, and coordination with the Federal Transit Administration, state and City of Boston agencies.

Chittenden County Metropolitan Planning Organization/Vermont Agency of Transportation, Burlington-Essex Corridor Study, Burlington, Winooski, Colchester, Essex Junction, Vermont. As Project Manager, responsible for Alternatives Analysis, Environmental Assessment, project development, finance plan, and schematic design for the preferred alternative, consisting of improvements to the eight-mile Winooski Branch freight line to provide commuter rail service, rehabilitation of an historic brick-arch rail tunnel, five new stations and associated Transit-oriented Development (TOD) plans. Coordinated with the State Historic Preservation Officer (SHPO) through the Section 4(f)/106 process to obtain a finding of "no adverse effect" for the proposed tunnel rehabilitation concept and with the FTA to obtain a FONSI for the project. A public process was developed and implemented to incorporate stakeholders input.



Caroline Hampton, PE

Environmental

Ms. Hampton is a Registered Professional Engineer with 15 years experience in storm water hydrology and water resources engineering. She has worked with numerous teams of engineers, town officials and developers to review the applicable regulatory and site constraints for potential development parcels, and works with state transportation officials to build comprehensive storm water management plans for compliance with NPDES Phase II. Ms. Hampton has applied her specialization in hydraulic and water quality modeling to design storm water quantity control and treatment systems, to quantify flood volume, and wetland compensation during development planning activity. She has also performed water quality modeling for various sites. Ms. Hampton is managing MassHighway Department's program for coverage under the NPDES Phase II MS4 General Permit for stormwater discharges. The project has been on-going since 1999 and has included preparation and submittal of their NOI for coverage and Storm Water Management Plan (SWMP), development of various new programs to address the minimum control measures, preparation of annual reports and ongoing compliance after receiving discharge authorization from EPA and DEP. Ms. Hampton led the successful development of the MA Department of Conservation and Recreation's (DCR's) SWMP for compliance and authorization under the same regulations. Ms. Hampton managed several projects for development of construction Storm Water Pollution Prevention Plans to meet the NPDES Construction General Permit Requirements and coverage of industrial sites under the Industrial NPDES Permit.

MassHighway Department, NPDES Phase II MS4 Storm Water General Permit, Massachusetts. Project Manager for preparation and implementation of MassHighway Department's NPDES Storm Water Management Plan and Notice of Intent to comply with NPDES Phase II regulations. MassHighway's outfalls along approximately 3000 miles of MassHighway roads are within "urbanized areas" have received authorization to discharge under the NPDES Phase II general permit. AECOM and MassHighway worked together to create a plan that included developing achievable measurable goals with MassHighway's decreasing labor pool and budget. Preparation of the plan has included various meetings with EPA - Region 1, Massachusetts DEP and an internal MassHighway Storm water Committee with representatives from each district, operations, maintenance, construction and planning. Responsibilities include closely working with MassHighway representatives; preparing documents for monthly internal

Education

BS, Civil Engineering, Union College, Schenectady, NY

Registration Professional Engineer, MA

Years of Experience: 17

committee meetings; preparation of plan and annual reports; attendance at EPA/DEP meetings, public hearings and related seminars; and preparation of auxiliary documents for MassHighway internal use and training. The plan received public review and comment by interested watershed groups and non-profit groups. AECOM has helped MassHighway implement programs from the plan. AECOM has prepared each annual report which summarizes the progress of achieving the measurable goals. Some of the programs have included development of Illicit Connection Prohibition Policy; Drainage Tie-In Policy; and Catch Basin Accumulation Study to aid MassHighway in determining the appropriate street sweeping schedules on their roads.

Massachusetts Department of Conservation and Recreation, Storm Water Permitting, Massachusetts.

The Massachusetts Department of Conservation and Recreation (DCR) was subject to EPA's Municipal Separate Storm Sewer System (MS4) General Permit which required entities which own and operate storm sewer systems within urbanized areas to comply with six minimum control measures. The primary requirement of this permit was to develop and implement a Storm Water Management Program (SWMP) which proposed or identified programs which met each of the six minimum control measures. The program was under close scrutiny by several non-profit groups, including the Charles River Watershed Association (CRWA) and Conservation Law Foundation (CLF), due to the number of parkways and facilities within the Charles River watershed. The submittal of the SWMP was required within an extremely short time frame to demonstrate action by DCR to the agency and non-profit groups, since DCR did not meet the original submittal deadline for the Phase II program. DCR submitted the SWMP and NOI application, and the agencies have signed a Memo of Understanding (MOU) indicating that no further legal action will be taken if the MOU requirements are met. DCR received EPA's authorization to discharge in compliance with the general permit. AECOM was involved



Caroline Hampton, PE

in the inventory of all DCR drainage outfalls in urbanized areas including parkways and facilities; prepared the NOI application; developed the SWMP; met with EPA, CRWA and CLF regarding the DCR program; prepared forms to meet the NPDES Construction General Permit for on-going construction projects; trained DCR employees on the implementation of these programs and annual reporting; reviewed outfalls for impacts to rare and endangered species habitats or historic properties; and aided DCR in the implementation of the programs.

MassHighway Department, Storm Water Drainage Inventory, Massachusetts. Project Manager for the successful inventory of approximately 2,600 miles of MassHighway roads through a combination of plan review and field inventory. Drainage plans were scanned and georeferenced using digital orthophotos. Storm water outfalls and attribute information on the plans were digitized into a GIS personal geodatabase. The remaining 560 miles of road were field inventoried. AECOM field teams surveyed these stretches of highway, collected a GPS position and recorded attribute information for the identified outfalls. The data points were imported into the existing database and the comprehensive dataset was quality reviewed. More than 17,000 MHD storm water outfalls were identified through this program in two years.

Massachusetts Highway Department, Charles River Watershed Study, Massachusetts. Project manager for a three-year watershed-wide study of all discharges from MassHighway owned roadways within the lower Charles River watershed. As a part of the EPA's drive to provide a swimmable, fishable Charles River and NPDES Phase I, the EPA mandated that all municipalities and public agencies review each of their discharges within the watershed during dry weather to identify illicit connections, and then rectify any problems identified. Over 300 discharges were inventoried, located with GPS, and sampled, if flowing during dry weather. Responsible for scheduling and supervising crews performing field research, reviewed sample results to determine if source of dry weather flow was an illicit connection, and coordinated with EPA regarding follow up work necessary to determine source of flow; contacted Client; compiled GPS data into a GIS datalayer for MassHighway and EPA's use; and prepared 6 bi-annual reports for EPA.

MassHighway Department, Watershed Studies, Massachusetts. Project manager for statewide watershed study for MassHighway. As part of TMDL development, Massachusetts DEP requested that MassHighway prepare a report estimating the pollutant load from MassHighway owned roadways to 65 lakes. As a preliminary review, AECOM performed a hydrologic loading estimate to each of the waterbodies and the MassHighway roadway contribution to that runoff volume. Based on the ratio of MassHighway runoff to overall average annual runoff volume, MassHighway developed a preliminary list of waterbodies that received a significant volume of runoff from their roadways, and that merited further analysis relative to pollutant loadings. Responsibilities included project management, review of junior staff analysis, preparation of report, and coordination with client.

MassHighway, Route 44 Highway Expansion, Massachusetts. Prepared conceptual drainage design for widening of Route 44 from 2 lanes to 4 lanes. High-profile project due to the project being the first large scale widening project to be permitted by MassHighway under the new Massachusetts Storm water Policy regulations. The plethora of wetlands located adjacent to the existing roadway and the linear nature of the roadway added additional complications inherent in roadway widening projects. Project included review of potential BMP devices, meeting with agencies to determine their understanding of the new policy requirements, design of conceptual storm water treatment devices, water quality modeling to illustrate anticipated compliance with Policy's requirements, peak rate modeling on a sub-watershed and watershed approach, and preparation of narrative for storm water portion of DEIR.

Massachusetts Highway Department, Route 1 Wetland Creation, Walpole, Massachusetts. Project included the design and permitting of a wetland replication area to compensate for wetlands affected during the widening of Route 1. Analysis of the surface hydrology of the area under existing and developed conditions demonstrated that the wetland construction would not increase the peak rate of storm water flows downstream. Responsible for coordination with in-house wetland scientist to design wetland creation, development of bid plans, construction materials estimate, and presentation of plans to Conservation Commission, Walpole Town Engineer, Army Corps of Engineers and Highway Department.



Kathryn Barnicle, PWS

Environmental

Ms. Barnicle is a Senior Wetland Scientist. She has over twenty years of experience in delineating inland and coastal wetland boundaries, strategic permitting and interpreting environmental regulations and policies, designing and supervising wetland replication areas, monitoring construction projects, and preparing local, state, and federal environmental permit applications primarily in the State of Massachusetts. She is currently responsible for managing a wide variety of projects for private homeowners, local regulatory agencies, construction contractors, and large development companies. Ms. Barnicle has a B.S. in Forestry from the University of Massachusetts, is a member of the Society of Wetland Scientists (SWS), and has received her Professional Wetland Scientist (PWS) designation (No. 799) from the SWS. Her knowledge and expertise in wetland vegetation and soils identification has enabled her to train, supervise, and manage field operations for the firm in addition to being Project Manager for numerous large and complicated projects.

Town of Hull, Proposed Desalination Plant, Hull, Massachusetts. Assisted the Town of Hull in the feasibility and development of a proposed desalination plant to provide the town with drinking water. The project involved assessing the environmental impacts from sources of intake water (i.e., groundwater, seawater, etc.), volume of water required, upland treatment facilities, and proposed outfall/brine disposal (i.e., direct outfall, combined sewage outfall, etc.). Determined the permits required and outlined the environmental studies necessary to obtain those permits. Performed studies including analysis of fish, shellfish, benthic invertebrates, water quality, bathymetry, and hydrography.

Wastewater Evaluation, Fairhaven, Massachusetts.
Corrected existing impacts to shellfish beds adjacent to West Island which had been closed to recreational and commercial shell fishing. From a permitting standpoint, the main concern of the project was whether the effluent from the tertiary treatment system (which met the state groundwater discharge standards) would impact the downgradient wetlands and waters including the adjacent salt marsh and Nasketucket Bay.
Conducted research which indicated that the ability of the salt marsh to attenuate the anticipated loading would not result in degradation to the marsh. Provided research of coastal wetlands and how wetlands attenuate certain pollutants in support of tertiary treatment system design. In addition, provided permit-

Education

BS, Forestry, University of Massachusetts

Registration

Professional Wetland Scientist, US

Years of Experience: 24

ting support for local and state wetlands permits. The project received the National Recognition Award from the American Council of Engineering Companies for their work on this project. AECOM's contributions were acknowledged as part of this award.

New England Development, Coastal Redevelopment, Boston, Massachusetts. Assisted New England Development with environmental issues associated with the redevelopment of the Pier 4 site located within the South Boston Waterfront District. The site consisted of 9.47 acres, approximately 4 acres of which is water. The proposed project involved a multi-use development with hotel, office, and residential buildings and the creation of three acres of open space. Work also included enhanced public access to the site and activation of the watersheet through water dependent use alternatives presently being studied. AECOM provided local, state, and federal permitting assistance involving Chapter 91, Coastal Zone Consistency, Massachusetts Wetlands Protection Act, Massachusetts Environmental Policy Act, and Clean Water Act.

Highway Redevelopment, Weymouth to Duxbury, Massachusetts. AECOM was responsible for the delineation of all wetlands within the median to the existing highway Route 3, as well as verification of wetlands present on either side of the highway. Abbreviated Notices of Resource Area Delineations were prepared and presented to the five Conservation Commissions in the project vicinity. Assisted in the production of an Environmental Impact Report to be filed pursuant to the Massachusetts Environmental Policy Act (MEPA). Contributions included sections on wetlands, surface and groundwater quality, wildlife habitat and plant communities, geology and soils, and aquatic habitat and fisheries.

Highway Redevelopment, Carver to Raynham, Massa-chusetts. AECOM was responsible for the delineation of all wetlands within the project corridor. Requests for Determination of Applicability were prepared and



Kathryn Barnicle, PWS

presented to the Conservation Commissions in the five towns. Prepared a wetland delineation report which included descriptions of all wetlands with functions and values assessments according to the highway methodology workbook. Wildlife habitat assessments were performed at each of the major river and stream crossings. An Initial Site Assessment was performed to identify potential sites of concern along the Route 44 reconstruction corridor relative to the presence of oil and/or hazardous materials or related structures which may interfere with construction activities. A Storm Water Management Design Analysis was performed for both storm water quantity and quality pursuant to the Massachusetts Storm Water Management Policy performance standards. Assisted in the production of an Environmental Impact Report to be filed as part of the National Environmental Policy Act (NEPA) as well as the Massachusetts Environmental Policy Act (MEPA). Contributions included sections on wetlands, surface and groundwater quality, wildlife habitat and plant communities, geology and soils, and aquatic habitat and fisheries.

J.F. White Contracting Co., Stormwater Pollution
Prevention Plan, Old Colony Railway Reconstruction
Project, Braintree to Plymouth, Massachusetts. Prepared a Stormwater Pollution Prevention Plan (SWPPP)
pursuant to the National Pollutant Discharge Elimination System (NPDES), including a compilation of all appropriate conditions identified in applicable local, state, and federal permits.

Rockland Trust Company, Environmental Site Assessment, Middleboro, Massachusetts. Prepared an Environmental Site Assessment (ESA) for a 64-acre parcel located in Middleboro which contained approximately 40 acres of active and newly-constructed cranberry bogs to determine compliance pursuant to Massachusetts General Law Chapter 21E and pursuant to any local, state, and federal wetland protection laws.

Barnstable County Commissioners, Cranberry Bog Restoration Project, Massachusetts. Assisted the Barnstable County Commissioners with a State Community Development Grant to provide jobs for low to moderate income families through the restoration of abandoned cranberry bogs on lower Cape Cod. Coordinated with local, state, and federal permitting agencies in order to streamline the permitting process for the restoration of abandoned bogs.

Oak Bluffs Board of Health, Feasibility and Manage-

ment Study of Farm Pond, Martha's Vineyard, Massachusetts. Managed and conducted a feasibility study of the pond to quantify water quality, watershed limits, and flushing characteristics of the system to formulate alternatives for maintaining a continuous opening between the pond and Nantucket Sound. Assisted the Oak Bluffs Board of Health in applying for all applicable environmental permits including the preparation of an Environmental Impact Report for review by the Secretary of Environmental Affairs under the Massachusetts Environmental Policy Act.

Private Owner, Camelot Industrial Park, Wetland Design, Plymouth, Massachusetts. Assisted in the design of a 3.5 acre wetland replication area which included a variety of hydrologic regimes and planting schemes. The project will include monitoring to insure success of the constructed wetland.

J.F. White Contracting Co., Old Colony Railway Reconstruction Project, Braintree to Plymouth, Massachusetts. Provided advice on erosion and sedimentation controls to reduce and prevent impacts along the reconstructed railroad right-of-way. Supervised construction of three wetland replication areas including post-construction monitoring to occur over two years.

Nantucket Memorial Airport, Fuel Transfer Facility, Nantucket, Massachusetts. Prepared a Supplemental Final Environmental Impact Report (SFEIR) for the fuel transfer facility located in Nantucket Harbor. This facility allowed for the transference of jet fuel and avgas from barges to waiting tank trucks which transported the fuel to the Airport. A Facility Response Plan required by the U.S. Coast Guard was completed and submitted.

Cape Cod Hospital, Wetland Restoration, Yarmouth, Massachusetts. AECOM assisted Cape Cod Hospital with the implementation of a wetland restoration plan in Yarmouth, Massachusetts subject to an enforcement action by the Environmental Protection Agency. Restored the site's wetland hydrology to support natural wetland re-vegetation, with a supplemental seeding program in upland areas. AECOM installed two vegetation monitoring plots in each of five bog areas, and installed piezometers (small monitoring wells) in the center of each plot for determination of groundwater levels. Determined the proper elevation for flashboards at each of the five hydrologic control points on the site to maintain groundwater levels.



Terry Ramborger, PWS

Environmental

Mr. Ramborger is a Senior Soil/Wetland Scientist working for AECOM in their AECOM Environment Section. Mr. Ramborger is responsible for the delineation of wetland and soil systems and has worked on a wide range of environmental tasks. Mr. Ramborger has conducted soil mapping utilizing Site-Specific Soil mapping Standards for New Hampshire & Vermont and HISS standards in New Hampshire. Mr. Ramborger has conducted a number of natural resource assessments and characterization studies, as well as Environmental compliance management support. Conducted environmental inspection and monitoring, and field reporting. Worked directly with site contractors to interpret field/ construction conditions pertaining to potential wetland impacts, completed inspection reports, and made recommendations for mitigation measures. In addition, he is experienced in the preparation of a variety of environmental permit applications and reports on a wide range of projects requiring an understanding of the environmental permitting process using federal, state, and local criteria. Mr. Ramborger's work on projects encompasses FERC applications; federal and state Clean Water Act (U.S. Army Corps of Engineers) permit applications; and local wetland protection permit applications.

ARRT Trail, Hudson to Marlborough, Massachusetts. Task leader for ARRT trail project in Massachusetts. Specifically conducted wetland delineation along proposed trail, completed and submitted permit applications to local/state and federal regulatory agencies, and conducted site visits with local/federal officials.

Massachusetts Highway Department – Massachusetts. Task leader for Route 128 Add-a-Lane roadway improvement project in 6 communities in Eastern Massachusetts. Primary responsibilities included wetland delineation and assessment, as well as Army Corps of Engineers documentation, of wetland systems within the median area along 13 miles of Route 128 by State and federal criteria. The work was in support of an Army Corps of Engineers 404 Permit Application and state environmental assessment.

Concord Municipal Light Plant Project, Massachusetts. Environmental project leader for the development of a utility operations center in Concord, Massachusetts primarily responsible for all aspects of preparing applications and obtaining all environmental permits on the state and federal level. Environmental permitting included: Notice of Intent, Army Corps of Engineers Section 404, Section 401 water quality certification, and NPDES certification.

Education

MS, Forest Soils, University of Washington

BS, Molecular Biology, University of Washington

BA, Forestry, University of Washington

BA, Computer Information Systems/Business, University of Washington

AA, Arts & Sciences, Shoreline Community College

Registration

Professional Wetland Scientist, US Professional Soil Scientist, US

Years of Experience: 28

Braintree Electric Light Department Project, Massachusetts. Project Manager for substation expansion project. Directly responsible for the permitting of a proposed expansion of an existing electric substation in Braintree, Massachusetts. In addition, made formal presentation to the local Conservation Commission during the public hearing process.

Highland Ridge – Massachusetts. Environmental project leader for the conversion of an existing chicken farm to an 18-hole golf course. Directly responsible for the wetland delineation and assessment of an approximately 344-acre site in Westminster, Massachusetts. Delineated wetland resources areas under criteria and procedures of the Massachusetts Wetland Protection Act and Army Corps of Engineers' 1987 Wetland Delineation Manual. The wetland boundary points were specifically established and surveyed using GPS equipment. Prepared Abbreviated Notice of Resource Area Delineation application.

New Hampshire Department of Transportation, New Hampshire. Task leader for Route 16/302 Corridor Upgrade/Bypass project in northern New Hampshire. Primary responsibilities included: 1) Identification of potential impacts to farmland areas associated with the implementation of a new major bypass highway; 2) Site assessment of alternative routes; 3) Prepared Technical Memorandum on potential farmland impacts that was incorporated in an EIS; 4) Delineation of wetland systems over 11-mile proposed roadway; 5) Site assessment for wetland mitigation areas; 6) Assisted preparing state and federal permits; and 7) Assisted in the completion of a Final EIS.



D. Michael Ball, PWS

Environmental

Mr. Ball is a botanist and wetland resource scientist currently serving as an AECOM Water and Natural Resources Section Manager in Sagamore Beach, Massachusetts. He specializes in performing and managing wetland resource-related restoration planning and regulatory compliance capital projects. Mr. Ball has nearly 15 years of experience in coastal and inland wetland resource area identification and delineation, wetland resource area restoration, impact mitigation planning and design, wildlife habitat inventory, rare plant species surveys, third-party project and delineation review, wetland function and value determination, and regulatory compliance matters on the local, regional, state, and federal levels.

Massachusetts Department of Transportation – Highway Department, Dennis Yarmouth Rail Trail. Conducted a box turtle habitat assessment along proposed seven-mile Massachusetts Department of Transportation Rail Trail in Dennis and Yarmouth, Massachusetts. Portions of the Rail Trail are located within Massachusetts Natural Heritage and Endangered Species Program mapped Priority Habitat

Massachusetts Highway Department, Long-Term Coastal Highway Management/Protection Alternatives Plan, Martha's Vineyard, Dukes County, Massachusetts. As field biologist, co-conducted fieldwork necessary to obtain coastal beach and dune profile data along shoreline between the towns of Oak Bluffs and Edgartown. Was responsible for maintaining and using a database to generate beach and dune profiles during the two-year study period.

Massachusetts Highway Department, Highway Expansion Projects, Route 3, Pembroke to Weymouth and Route 44, Carver to Raynham, Massachusetts. Performed wetland-focused field surveys along two state highway project corridors to identify and delineate jurisdictional wetland resources and document existing conditions. In addition, responsibilities included collecting and assimilating information from desk-top research necessary to complete a wetland habitat functions and values assessment in accordance with the Corps Highway Methodology.

Siasconet Beach Homeowners Association, Coastal Erosion Control Project, Siasconset, Nantucket Island, Massachusetts. Conducted a four-year environmental impact field monitoring program during the installation and operation of an experimental beach erosion control system on a highly dynamic segment of shoreline. Responsible for all field data collection and other on-

Education

BS, Plant Biology/Coastal and Marine Botany, University of Massachusetts, Amherst

Registration

Professional Wetland Scientist, NH

Years of Experience: 15

site monitoring tasks, including groundwater elevation, groundwater and ocean water quality, plant community change monitoring, and prepared monitoring reports.

Barnstable Municipal Airport, Airport Expansion, Hyannis, Massachusetts. Performed habitat assessments and pond sampling in and near two bodies of water that were the focus of an ecological risk assessment. Prepared written materials including tables and figures describing biological resources, existing common and rare wildlife usage, and predator-prey relationships that were included in the Development of Regional Impact application required by a Cape Cod Commission subcommittee.

Northeast Utilities, Linear Utility Expansion, Chicopee and West Springfield, Massachusetts. Responsibilities included performing wetland resource area impact assessments and identifying impact mitigation candidate sites along proposed project corridor. Regarding the proposed overhead utility crossing of the Connecticut River, was responsible for preparing the permit application documents necessary for the Massachusetts Waterfront Act (Chapter 91) license.

Massachusetts Division of Capital Asset Management, Power Plant Demolition, Charles River, Medfield, Massachusetts. Performed wetland-related regulatory compliance tasks including wetland resource area identification and delineation, permit application preparation, impact mitigation planning, and client representation at public hearings and at on-site meetings before the regulatory review agencies.

Massachusetts Wetlands Restoration Program, Tidal Restriction Removal and Coastal Habitat Restoration, Former East Sandwich Game Farm, East Sandwich, Massachusetts. Responsible for completing resource area identification, delineation, and project impact mitigation planning tasks and all multi-permit application preparation tasks, client/project representation, coordination, and review agency correspondence associated with regulatory compliance phase of the project. of this project.



Robert Egan, EIT

Environmental

Mr. Egan has 13 years of professional and academic experience. He has a Bachelor of Science in plant and soil sciences from the University of Massachusetts and a Master's degree in natural resources science from the University of Rhode Island. He has performed multiple ecological and environmental studies involving wildlife, wetlands, stream, lake, and watershed topics. Mr. Egan's abilities include wetland delineations and evaluations, wetland restoration design, construction and monitoring, wetland permitting, vegetation surveys, and wildlife habitat assessments including long-term radio telemetry studies of rare state-listed turtle species, drift-fence surveys to monitor amphibian population dynamics, and macro-invertebrate surveys. He is a Certified Professional Soil Scientist under the American Society of Agronomy. He is also proficient in the use of ESRI ArcMap and ArcInfo GIS, and associated extensions (e.g., Spatial Analyst) for map production and spatial analyses. His Master's thesis included conducting a 2.5-year field research program that investigated within-pond and landscape-level factors influencing the breeding effort of two amphibian species, wood frogs (Rana sylvatica) and spotted salamanders (Ambystoma maculatum) within 136 potential breeding ponds. The results of this research have been published by the Society of Wetland Scientists and the Society for the Study of Amphibians and Reptiles (In Press).

United States Navy, Rare Turtle Population and Habitat Study, Weymouth, Massachusetts. Designed and implemented a mark-recapture study to assess population demographics, habitat use, and home range of a rare freshwater turtle species, the spotted turtle (Clemmys guttata), and a rare terrestrial turtle species, the box turtle (Terrapene carolina). Calendar year (CY) 2007 marks the eighth year of this research program, in which we are monitoring turtle populations using radio-telemetry-tracking techniques. All field observations from trapping, meander search, and telemetry efforts are GPS surveyed in the field and imported into Geographic Information Systems. These data are analyzed using ESRI ArcGIS 9.0, ArcView 3.2 and ArcView extensions including Spatial Analyst 2.0 and Animal Movement v2. Critical habitats including feeding, nesting, and communal hibernaculas have been identified via radio-telemetry. In addition, thread-bobbintracking techniques were successfully used during the CY 2003, 2004 and 2005 efforts to identify additional nesting habitats.

Conservation and Management Plan, Weymouth, Massachusetts. Prepared critical components of a Conservation and Management Plan for submittal to

Education

MS, Natural Resources Science, University of Rhode Island

AAS, Landscape Contracting, Stockbridge School of Agriculture

BS, Plant and Soil Sciences, University of Massachusetts

Registration

Engineer-in-Training

Years of Experience: 13

the state's Natural Heritage and Endangered Species Program. These components were designed to protect a population of Eastern Box Turtles (Terrapene carolina), which are a Massachusetts state-listed Species of Special Concern, using baseline data from a long-term research program conducted at the site. This plan included a Construction Period Monitoring and Protection Plan, a Long-term Monitoring Plan, and a Nesting Mitigation Plan.

Rare Turtle Population and Habitat Study, New Bedford, Massachusetts. As part of an ongoing evaluation of potential runway extension alternatives, a mark-recapture study of a population of spotted turtles (Clemmys guttata) was conducted using trapping, meander search, and radio-telemetry tracking techniques. Up to ten individuals were monitored via radio-telemetry to identify habitat use and home range. Mark-recapture and trapping methods were used to estimate population sizes with a total of 98 turtles marked during the three-year study. Turtle field-observations were GPS surveyed and imported into Geographic Information Systems for further analyses.

Turtle Population and Habitat Study, Boxboro, Massachusetts. Conducted a three-season habitat study and population evaluation of four turtle species in a previously unstudied pond. Utilized mark and recapture methods to establish baseline population data of each species. Two species of rare turtles were documented including Blanding's turtle (Emydoidea blandingii) and spotted turtle (Clemmys guttata). Radio-telemetry techniques were utilized to locate upland nesting sites of Blanding's turtles, approximately 700 meters from the primary aquatic habitat. Tracked hatchling turtles during the fall of 1997 to nearby wetland habitats using fluorescent powder and ultraviolet lights.



Elissa Brown, LSP

Hazardous Materials

Ms. Brown has 25 years of professional experience directing environmental assessments, hazardous waste site remedial investigations, and remedial alternatives feasibility studies. In recent years, she has managed both government and commercial programs designed to investigate environmental hazards caused by the release of hazardous waste and air toxics and has served as LSP-of-record at more than 60 sites throughout the state. She has extensive experience in regulatory compliance including the development of environmental mitigation programs. Ms. Brown was formerly with the USEPA conducting technical evaluations of hazardous waste disposal facilities, evaluating contaminant migration and dispersion, and reviewing permit applications. She also served as a consultant to the Massachusetts Department of Environmental Protection for the development of the Massachusetts Contingency Plan (MCP) and the policy and procedures for cost recovery from bankrupt or abandoned sites. In addition to her professional experience, Ms. Brown has served on the local Planning Board, Wastewater Management Committee, Conservation Commission, and Public Works Commission and has extensive experience in the public presentation of technical material.

Massachusetts Bay Transportation Authority, On-Call Environmental Services, Boston, Massachusetts.

Project manager/LSP-of-Record on a variety of environmental matters, with particular emphasis on the development and preparation of documents required under the MCP, including spill response and release notification, Phase I initial site investigations, Phase II comprehensive site characterization, risk assessments, tier classification, and downgradient property status determinations.

Massachusetts Bay Transportation Authority, Urban Ring Phase 2 DEIR, Boston, Massachusetts. Task manager for the assessment of project geology and soils, and a hazardous materials assessment for the proposed Urban Ring. Supervised the evaluation of known and suspected oil and hazardous materials release sites along each of the alternatives to determine potential impacts to the project through database review, review of state and municipal files, historic resources, and site reconnaissance.

Massachusetts Highway Department, Interchange Redesign, Canton, Massachusetts. Task manager for the environmental site assessment within and adjacent to the proposed project area. Supervised the evaluation of known and suspected oil and hazardous materials

Education

MS, Geochemistry, Northwestern University, 1980 BA, Geology, Kirkland (Hamilton) College, 1978

Registration

Certified Hazardous Materials Manager, #0409 Licensed Environmental Professional, CT, #462 Licensed Site Professional, MA, #5371 Professional Geologist, US, #8391

Years of Experience: 25

release sites to determine potential impacts to the project through database review, review of state and municipal files, historic maps and photographs, and site reconnaissance.

Massachusetts Highway Department, Rotary Redesign, Concord, Massachusetts. Task manager for the environmental site assessment within and adjacent to the proposed project area. Supervised the evaluation of known and suspected oil and hazardous materials release sites to determine potential impacts to the project through database review, review of state and municipal files, historic maps and photographs, and site reconnaissance.

Dominion Energy Power Station, Former Unlined Treatment Basins Remediation, Salem, Massachusetts.

LSP-of-record for closure of former unlined treatment basins located at the oil and coal fired power plant located on Massachusetts Bay. Oversaw the evaluation of site groundwater data and risk characterization conducted to ensure there was no significant harm to human health, safety, public welfare, or the environment due to concentrations of certain metals, particularly vanadium, present in groundwater. Responsible for preparation of an activity and use limitation to eliminate certain exposure pathways and response action outcome documents.

Montgomery Power Partners, L'Energia and Lowell Expansion Site Groundwater Sampling, Lowell, Massachusetts. Project manager for due diligence, pre-purchase groundwater monitoring at two adjacent parcels, located downgradient of the Silresim Superfund site, which are being developed for energy generation. Managed sampling and analysis of groundwater from the existing monitoring wells to ensure that site conditions had not substantially changed since the last site assessment.

ALISON RICHARDSON, Principal

Landscape Architect, CLARB #3200, Massachusetts Reg. #658; Rhode Island Reg. #354, Connecticut Reg. #976; Maine Reg. #LAR3600; New Hampshire Reg. #75

PROFESSIONAL EXPERIENCE

Transportation, Urban Design and Streetscape

CONRAC -Consolidated Rental Car Facility for MassPort with PB World

Route 2 at Concord Rotary with AECOM and at Crosby' Corner with Berger, for MassDOT

MassPort Barriers Security Project including Logan Office Center and Terminal B Landscape, East Boston, MA, for MassPort, with Cambridge Seven and Weidlinger Associates

Cape Cod Rail Trail Redesign Project, pedestrian, equestrian and bicycle trail through six Cape Cod towns for Department of Conservation and Recreation with FST Inc.

MassPort Central Parking Garage Expansion and Repairs, with Parsons Brinkerhoff

Route 146/Hurley Square, Worcester, MA, for MHD, with Greenman-Pederson, Inc.

Logan Airport/Route 1A (I90) Interchange, Initial and Final Roadways, Central Artery/Tunnel project, Boston, MA, for the MHD, with FST/TYLI joint venture

Quinebaug River Park and Bicycle Trail, Killingly, CT, for the CONNDOT, with FST, Inc.

Parks

Providence Riverfront Park, Providence, RI, for Rhode Island Department of Transportation with the Maguire Group

Bremen Street and Memorial Parks, a 41-acre park and bike-trail system in East Boston for the Central Artery/Third Harbor Tunnel project, Boston, MA, for MHD, with Fay, Spofford & Thorndike, Inc.

Market Square Park at Mashpee Commons and Great Neck Road South Performance Park, Mashpee, MA, for Mashpee Commons LTD

Constitution Beach, East Boston, MA, for the Metropolitan District Commission

Shipyard Park Phase III, Charlestown Navy Yard, Boston, MA, for Boston Redevelopment Authority

Boarding House Park, Lowell, MA for the National Park Service

Historic Landscapes

Market Square Restoration, Newburyport, MA, for the City of Newburyport, with FST, Inc.

Wellesley Town Hall Master Plan, Wellesley, MA, for the Town of Wellesley

Tremont Street/Boston Common Reconstruction, Boston, MA, for the DPW with Edwards and Kelcey,

Boott Mills Canalway, Lowell, MA, for Congress Group Properties

Interior Planting

Blue Cross/Blue Shield, Hingham and Quincy offices, MA, with Margulies & Associates, Inc.

Housing

Whittier Place, Boston, MA, with LeMessurier Consultants

Mattapan II and III & IV, Mattapan, MA, for Trinity Financial, with Bergmeyer Associates Architects

Campus and Institutional

Integrated Science Complex - UMASS-Boston for DCAM with Goody Clancy Architects

Springfield Technical Community College, Springfield, MA for DCAM with Office of Michael Rosenfeld

Salem District Court, Salem, MA for DCAM with Goody Clancy Architects

Plymouth Courthouse, Plymouth, MA for DCAM with Perry Dean Architects

Worcester State College Administration Building for DCAM with Miller Dyer Spears Architects and Memorial Garden and Courtyard Projects for Worcester State College

Baker Library, Bentley College, Waltham, MA with Elkus Manfredi Architects

The Gordon School Lower School and Early Childhood Playgrounds, East Providence, RI

Schoodic Educational and Research Center, Acadia National Park, ME, for the National Park Service.

The Charles River School, Dover, MA, Athletic Fields, Site Plan Improvements, and Master plan

Berklee School of Music, Boston, MA, with Miller Dyer Spears, Architects

Land Reclamation and Environmental

Winnisquam Lake Access Site and Boat Ramp, Laconia, NH for New Hampshire Fish and Game with FST/NH

Lake Sunapee Public Boat Facility, Newbury, NH for New Hampshire Fish and Game with FST/NH

Anderson Regional Transportation Center, Woburn, MA, for Massport and the MBTA, with Stone and Webster, Inc.

Millennium Park, West Roxbury, MA, for the Boston Public Works Department and the Boston Parks and Recreation Department, with Camp Dresser McKee, Inc.

Spectacle Island Erosion Control Planting, a Central Artery/Third Harbor Tunnel Project for MHD, with Century Weston and Sampson, a Joint Venture

Corporate and Commercial

Chatham Bars Inn and Resort, Chatham, MA, for Capital Properties, Inc.

One Enterprise Drive, Quincy, MA, for Blue Cross/Blue Shield, with Margulies & Associates, Inc.

25 Technology Place, Hingham, MA, for Blue Cross/Blue Shield, with Margulies & Associate, Inc.

100 Cambridge Street South Plaza, Fountain, and The Garden of Peace, Boston, MA, for Mass Development, with Elkus Manfredi Architects

Au Bon Pain Outdoor Garden Project, 24 cafés in New England, New York, Chicago, and D.C.

The Engine House YMCA, East Boston Bremen Park for the YMCA with Wingate Development

830-850 Boylston Street, Brookline, MA, for The Davis Companies

The Shops at Quonset Point, North Kingstown, RI, for New Boston Development Partners, with Bergmeyer and Associates

EDUCATION

University of Wisconsin, School of Agriculture and Life Sciences, Bachelor of Science in Landscape Architecture, 1976

MEMBERSHIPS AND AFFILIATIONS

Overseer: The Boston Architectural College (BAC) 2008 – 2013

Member: Boston Society of Architects since 2007 Member: The Arnold Arboretum since 1980 Founder Member: Boston Athenaeum

AWARDS

2010 Finalist Amanda Burden National Urban Design Space Award for Bremen Park, East Boston, MA 2006 Principal Designer for the Award Winning Providence Waterfront Parks Competition 2004 Gold Award for Engineering Excellence, given to the Prime, FST/TYLI, A Joint Venture, by the Venture, by the American Council of Engineering Companies of Massachusetts, for I-90 Logan Airport Interchange, Central Artery/Tunnel project

2001-2002 Massachusetts Recreation and Park Association Award for Millennium Park

2002 Environmental Business Council Award for Millennium Park, West Roxbury, MA

2000 Boston Society of Landscape Architects Honor Award for Spectacle Island, Boston, MA

1995 Federal Design Achievement Award for the Lowell Performance Pavilion in Boarding House Park, Lowell, MA

1995 The 1995 Pride in a Quiet Corner Award from the Northeast Connecticut Visitors District for the Ouinebaug River Trail Park, Killingly, CT.

1995 Citation of Merit by the "1995 Best Accessible Design Awards" Jury of the Commonwealth of Massachusetts for the Berklee School of Music Front Entry Design, Boston, MA

1992 "Excellence on the Waterfront" award for Lowell Canalway, Lowell, MA

1980's American Society of Landscape Architects Merit Awards for Promenade Park and Owens-Illinois World Headquarters, Toledo, OH and T.R.W. Headquarters, Lyndhurst, OH, work performed at Sasaki Associates

PUBLICATIONS

Landscape Design@USA 2, Pace Publishing Ltd., 2007 - Blue Cross Blue Shield of Massachusetts

MARY J. BAKER

Landscape Architect, Massachusetts Reg. #1333; Rhode Island Reg. #357

PROFESSIONAL EXPERIENCE

Transportation, Urban Design and Streetscape

Logan Airport Consolidated Rental Car Facility, East Boston, MA for Massport with PGAL.

Fenway-Longwood-Kenmore Transportation and Pedestrian Improvement Action Plan, Boston, MA, with HNTB Corp., for the Boston Transportation Department

Downtown Improvement Project, Manchester-by-the-Sea, MA, for the Town of Manchester-by-the-Sea

Memorial Drive Rehabilitation, Cambridge, MA, for Mirant/NSTAR/DCR Joint Venture, with Rizzo Associates, Inc.

Sagamore Rotary, Route 3/Route 6 Grade Separation Project, Bourne, MA, for the Massachusetts Highway Department, with Earth Tech, Inc.

Southwest Service Area Airport Edge Buffer, Logan International Airport, East Boston, MA, for Massport

100 Cambridge Street/Leverett Saltonstall Building Renovation, Boston, MA, for Mass Development, with Elkus Manfredi Architects

Parks

Gateway City Parks Program, Commonweatlth of Massachusetts, Executive Office of Energy and Environmental Affairs, Lowell South Common, Mill River Park in Taunton

Georges Island in Boston Harbor, MA for the Island Alliance with McGinley Kalsow

Peddocks Island in Boston Harbor, MA for the Island Alliance with Bruner Cott

Farlow Chaffin Parks, Newton, MA for the City Of Newton

Russell Field, Cambridge, MA, for the City of Cambridge

Historic Landscapes

Special Events on the Boston Common: Best Management Practices, for the Friends of the Public Garden

Campus and Institutional

Horace Mann School, Franklin, MA, with TAMS Consultants, Inc.

Plymouth Trial Court, Plymouth, MA, for The Commonwealth of Massachusetts DCPO, with Perry Dean Rogers & Partners, Architects

Corporate and Commercial

Chatham Bars Inn and Resort, Chatham, MA, for Capital Properties, Inc.

Jackson Square Mixed Use Development Project, Roxbury, MA for the Jackson Square Partnership

Blue Cross/Blue Shield of Massachusetts, Hingham, MA, for Margulies & Associates, Inc.

Blue Cross/Blue Shield of Massachusetts, Quincy, MA, for Margulies & Associates, Inc.

Au Bon Pain Outdoor Garden Project, Massachusetts, Connecticut, New York, Washington, D.C., and Illinois, for ABP Corp.

Mattapan Heights II, Mattapan, MA, for Bergmeyer Associates, Inc.

EMPLOYMENT HISTORY

Nov. 2000+ Brown, Richardson & Rowe, Inc.

1998-2000 Payette Associates, Inc. 1997-1998 Pressley Associates, Inc.

EDUCATION

Rhode Island School of Design, Master of Landscape Architecture, 1997 Radcliffe Seminars, graduate courses in design, drafting, graphics, plant materials, 1994 Harvard University, Career Discovery program in Landscape Architecture, completed 1993 Ohio State University, Bachelor of Science in Business Administration, summa cum laude, 1982

ACTIVITIES AND AWARDS

Member, Master Plan Steering Committee, Norton, MA, 1996-97 Faculty Award, Rhode Island School of Design, Providence, RI, 1997 Volunteer, Conservation Commission, Taunton, MA, 1996 Volunteer, Lyman Estate Greenhouse, Waltham, MA, 1992-93

AWARDS

2010 Finalist Amanda Burden National Urban Design Space Award for Bremen Park, East Boston, MA

American Council of Engineering Companies Silver Award, 2006, for the Russell Field Restoration Project.

PUBLICATIONS

Special Events on the Boston Common: Best Management Practices, for the Friends of the Public Garden, July 2008

<u>Farlow-Chaffin Park Historic Planning and Design Landscape Restoration Report</u>, for the City of Newton, MA, June 2006

<u>Historic Parkways Initiative, Memorial Drive Demonstration Project, Existing Conditions Report,</u> for Mirant/NSTAR/MDC joint venture, February 2003

<u>Preliminary Design Report for Southwest Service Area Airport Edge Buffer, Phase I,</u> for the Massachusetts Port Authority, July 2001

JING YANG

Urban Planner, Landscape and Urban Designer LEED ® AP

PROFESSIONAL EXPERIENCE

Transportation, Urban Design and Streetscape

Arborway Bus FacilityBicycle Path and Buffer Park, Forest Hills, MA, with Dewberry – Goodkind, Inc., for the Massachusetts Bay Transportation Authority

Route 2 at Concord Rotary with AECOM and Crosby' Corner with Berger, for MassHighway

CONRAC –Consolidated Rental Car Facility Taxi Pool, Cell Phone Lot, and Bus-Limo Pool Relocations for MassPort with PB World

Parks

Providence Riverfront Park, Providence, RI, for Rhode Island Department of Transportation with the Maguire Group

Bicentennial Park and Griffin Park Playgrounds, Fall River, MA for the Gateway City Parks Program, Executive Office of Energy and Environmental Affairs and the City of Fall River.

Taunton Mill River Walk, Taunton, MA or the Gateway City Parks Program, Executive Office of Energy and Environmental Affairs and the City of Taunton.

Campus and Institutional

Integrated Science Center Study - UMASS-Boston for DCAM with Goody Clancy Architects

Salem District Court, Salem, MA for DCAM with Goody Clancy Architects

911 Memorial, Worcester State College, Worcester, MA for Worcester State College.

Urban Design and Master Planning

(For Shanghai Times Architecture, Inc. Shanghai, China)

Historical Downtown Revitalization, Shanhaiguan City, China Downtown Neighborhood Revitalization, Shanghai, China Mengue Island Tourism Resort Beihai Beach Golf Resort and Communities, Beihai, China Huhhot Residential Community, Huhhot, China

Landscape Master Plan and Residential Design

(For Earth Design Associates, Casanova, VA)
Annita's Fox Hunting Farm, Upperville, VA
Black Forest Farm, Delaplane, VA
Beverley's Mill's Ruins, Broad Run, VA
Northern Fauquier Community Park, Marshall, VA

EMPLOYMENT HISTORY

Dec 2009 Brown, Richardson & Rowe, Inc.

2008 - 9/2009 Earth Design Associates, Inc. Casanova, Virginia, USA 2005-2007 Shanghai Times Architecture, Inc. Shanghai, China

EDUCATION

Washington University, St. Louis, MO, Master in Urban Design, August 2008 Tongii University, Shanghai, China, Bachelor of Landscape Architecture, June 2005

MEMBERSHIPS AND AFFILIATIONS

LEED AP

AWARDS

Dean's Scholarship, Graduate School of Architecture and Urban Design, Washington University, St. Louis, Missouri, 2007-8

People's Scholarship for three consecutive years: 2002-2005

Golden Palm Landscape Architecture Scholarship, 2004

First Place International Student Design Competition on City Downtown Revitalization, China 2005

PUBLICATIONS

"Preservation with a Sustainable Attitude-Exploring a way to preserve historical industrial buildings in Shanghai," Chinese Sustainable Development Academic Symposium.

Shahvir Vimadalal, P.E. Structural Department Manager



Project Role

Bridge Design

Education

Master of Science (Structures), University of Cincinnati, 1982

Bachelor of Engineering (Civil), M.S. University of Baroda, 1980

Licenses

Professional Engineer

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MA, RI, NH, VT, ME, CT, NJ, DE

Certification

FHA/NHI Training for Safety Inspection of In-Service Bridges

Professional Affiliations

- Member of American Society of Civil Engineers (ASCE) and Boston Society of Civil Engineers Section (BSCES)
- BSCES Structural Group (2008-Present), ACEC/CT Alternate Director (2004-2006) and Director (2006-

Experience

Mr. Vimadalal is Green's Structural Department Manager and brings more than 26 years of structural engineering experience with emphasis in various aspects of structural engineering applications. He is presently overseeing Green's structural engineering services for major bridge projects in Massachusetts, Vermont and Rhode Island.

A strong focus of his career has concentrated on public sector clients throughout the Northeast, specializing in bridge design, analysis, inspection and ratings covering a wide variety of bridge structures. Prior to joining Green he served as an independent consultant and as Chief Structural Engineer/Department Manager of a large Connecticut design firm. He was responsible for the design of rehabilitation/repair of 24 bridges on I-84 in West Hartford and Hartford, CT. Mr. Vimadalal's vast, in-depth experience on bridges is a major resource for Green to ensure all structural design issues are properly addressed.

Select projects demonstrating Mr. Vimadalal's recent experience are included below:

MassDOT Statewide Open Ended Footprint Bridge Contract

Mr. Vimadalal is the Structural Project Manager supervising Green's bridge projects since 2008. Bridges have included:

- Route 32 (Main Street) over Ware Canal, Barre
- Route 18 over Taunton River, Bridgewater/Middleborough
- Whitney Street over CSX Railroad, Sherborn

MassDOT Accelerated Bridge Program, Statewide

Mr. Vimadalal is the Project Manager for the Accelerated Bridge Program which addresses the Commonwealth's aging infrastructure. Mr. Vimadalal is completing design services for Route 19 (Wales Rd.) Bridge over Mill Brook, Brimfield. The Route 19 project is the first MassDOT project which incorporates the new prestressed concrete Northeast Extreme Tee (NEXT) Beam where the flanges are used as forms for the cast-in-place concrete deck saving valuable construction time.

MassDOT Taylor Street over Interstate 495 NB/SB, Littleton, MA

Mr. Vimadalal is the Project Manager to replace the existing five-span structure with a two-span continuous structure opening up the sight lines along I-495. The proposed structure will consist of eight welded steel plate girders haunched at the pier and composite with an 8-inch concrete deck. The welded plate girders will be constructed using hybrid sections to reduce the depth of the beams and minimize the amount the roadway profile need to be raised. The hybrid section will be fabricated using 70KSI HPS (High Performance Steel) for the flanges over the pier.



2007), ASCE/CSCE Structures Technical Group Officer (2001-2005) & Chair (2003-2004) and ASCE/CSCE President (1998-1999)

Roadway/Bridge Reconstruction, Route 1A (Main Street), Walpole, MA

Mr. Vimadalal is the Structural Project Manager for the design of a replacement bridge over the Neponset River.

MassDOT 2009-2013, Statewide Bridge Load Ratings

Mr. Vimadalal is the Project Manager for this project. Bridge types in these assignments include steel and prestressed concrete multi-beam, concrete rigid frames, thru-truss and concrete slab structures as well as concrete and metal culverts. Rating computations were performed using AASHTOWare Virtis, BRASS Culvert and STAAD software as well as in-house spreadsheets.

MBTA, Rehabilitation of the Merrimack River and Washington Street Bridges, Haverhill, MA

Mr. Vimadalal is Green's Structural Project Manager responsible for bridge inspection, ratings and repair/rehabilitation design services for the Washington Street Bridge. He also oversaw the hydraulic and scour study for the Merrimack River Bridge prepared by Green's Water Resources Division.

VTrans, VT Rte 125 over Lemon Fair River, Cornwall, VT

Mr. Vimadalal is the Structural Project Manager for this bridge replacement and roadway alignment improvement project. Design considerations included archaeological sites, class II wetlands, slope stabilization and traffic maintenance. The project is scheduled for construction in 2010.

<u>I-84 Resurfacing, Safety Improvements and Bridge Rehabilitation, West</u> Hartford/Hartford, CT

Project Manager for the rehabilitation/repair of 24 bridges including widening, deck replacement, superstructure replacement, deck repair, joint replacement and bearing replacement.

<u>Pearl Harbor Memorial Bridge I-95 over Quinnipiac River), New Haven, CT</u>

Project Manager for the final design of inspection platforms for the new bridge, a retaining wall along U.S. Rt. 1, structure layout for design of temporary bridge (major multi-span river crossing) and traffic maintenance.

Replacement of Route 4 Bridge over Farmington River, Farmington, CT

Project Manager for the substructure design of a new 400-foot long three-span continuous structure.

<u>Comprehensive Bridge Rehabilitation Program - Group 5, Various</u> <u>Locations in Rhode Island</u>

Mr. Vimadalal is the Project Manager for the design of the replacement of two bridges: Newell Bridge in Cumberland, RI and Newman Avenue Bridge in East Providence, RI. The Design Reports for both bridges were completed and Green is currently waiting for authorization for the final design.

Kevin Arsenault, P.L.S. Survey Manager



Project Role

Survey, ROW & Easements

Education

University of Lowell, Civil Engineering courses, 1986-1992

Licenses

Professional Land Surveyor – MA, NH

Professional Affiliations

- Massachusetts
 Association of Land
 Surveyors and Civil
 Engineers
 (MALSCE) member
- New Hampshire Land Surveyors Association (NHLSA) - member

Experience

Mr. Arsenault has more than 20 years of experience on various types of land surveying projects and is Green's Survey Project Manager. He is a professional land surveyor registered in New Hampshire and Massachusetts. Mr. Arsenault has directed or performed horizontal and vertical control surveys utilizing GPS, as well as robotic and non-robotic total stations; topographic and utility research and determination; and property and utility research and determination. He has directed preparation of existing conditions plans, as-built surveys, ALTA/ACSM land title survey plans, highway alteration plans, subdivision and condominium plans and proposed easement and right-of-way plans; He has also prepared legal descriptions for existing and proposed parcels. Mr. Arsenault currently directs technical aspects of survey crews and is responsible for all survey plan production requiring a land surveyor's certification. In addition to his survey experience, Mr. Arsenault is highly proficient in AutoCAD. Select projects demonstrating Mr. Arsenault's recent experience are included below:

MassDOT Route 128 Add-a-Lane/Route 109/ Route 135/Charles River/Great Plain Avenue Bridges, Needham and Dedham, MA

As part of a team led by the Louis Berger Group Green is providing a variety of civil support engineering services including surveying services. Initially Green provided a supplemental survey to incorporate the wetland flagging. Mr. Arsenault supervised the boring stakeouts which are being utilized with the stormwater design.

$\frac{MassDOT,\ Bridge\ Replacement,\ Wales\ Road\ (Route\ 19)\ Over\ Mill}{Brook,\ Brimfield,\ MA}$

Mr. Arsenault is the survey manager for the preliminary right of way plans, layout plans and written instruments for the project.

MassDOT, Bridge Replacement, River Street over Fairmount Commuter Rail (MBTA), Boston, MA

Mr. Arsenault is the survey manager for the existing conditions base mapping for the project. Field survey was completed for the bridge deck, approaches and roadway, the MBTA railroad right of way under the bridge and all utilities in the vicinity of the bridge. A boundary survey was conducted to establish the River St. and MBTA rights of way. Subsequent to design approval by MassDOT Mr. Arsenault directed the preparation of layout plans and the written instrument for the proposed bridge construction.

MassDOT, Bridge Replacement, Morton Street over Fairmount Commuter Rail (MBTA), Boston, MA

Mr. Arsenault is the survey manager for a portion of the existing conditions base mapping for the project. Field survey was completed for two abutting parcels needed for bridge construction. A boundary survey was conducted to establish the property lines and right of way lines of abutting side streets. Subsequent to design approval by MassDOT Mr. Arsenault directed the preparation of layout plans and the written instrument for the proposed bridge construction.



MassDOT, I-93/I-95 (Route 128) Transportation Improvements Project, Needham & Wellesley, MA

Mr. Arsenault supervised field survey crews and updated base map to reflect existing utility structures which were missing on the original base map. He has also compiled and established existing layout lines on the base map. He performed deed research and developed ROW plans to assist MassDOT in advanced takings. He is currently performing additional survey and mapping for extended project limits.

Two MBTA Twelve Bridge Contracts, Various Locations in MA

Mr. Arsenault is the survey manager for nine different MBTA bridges on two different contracts. Services include full existing conditions survey, bridge detail survey, utilities survey, property research and right of way determination. Sites included railroad bridges over water, railroad bridges over streets, street bridges over railroad and railroad bridge over railroad.

MassDOT, Route 1A (Main Street) Reconstruction, Walpole, MA

This project includes the reconstruction of 2.1 miles of Route 1A. Mr. Arsenault is responsible for supervising all surveying services provided for the project. Minor land acquisitions may also be required to accommodate geometric and safety improvements.

MassDOT, Roadway Reconstruction and Safety Improvements, Route 2 Farley Section, Erving, MA

Mr. Arsenault is the survey manager for the topographical and boundary surveys, ROW layout and takings plans for the project. The primary purpose of the project is to address safety concerns for Route 2 in the Farley Section of Erving between mile marker (MM) 60 and MM 62, a distance of two miles. An aerial photogrammetry survey was combined with ground surveyed cross sections to produce an accurate base map. Right of way and property line monuments were field surveyed to accurately establish state layout lines of Route 2.

<u>Safety and Traffic Improvements, Route 9 at Oak Street and Overbrook Drive, Natick/Wellesley, MA</u>

Mr. Arsenault is responsible for the survey services which included acquiring aerial basemapping and performing checkpoint surveys, performing detailed cross section surveys in accordance with MassDOT survey requirements, providing utility survey and mapping, state and town highway layout and deed research for the entire project. Conventional survey methods were employed in addition to utilizing reflectorless survey equipment which allowed survey of areas subject to heavy vehicular traffic without having to close lanes. A 1"=20' scale basemap was developed to support the design and included existing utilities, buildings, roadway features, contouring and pavement markings. To accommodate the proposed improvements, ROW acquisitions are required and Green is responsible for preparing ROW plans.

Marc R. Caufield, P.E. Senior Environmental Engineer



Project Role

Environmental Permitting

Education

Master of Science, Environmental and Resources Engineering, College of Environmental Science and Forestry at Syracuse University, 1984

B.S. in Forest Engineering, College of Environmental Science and Forestry at Syracuse University, 1977

Licenses

Professional Engineer – MA, CT & NY

Professional Affiliations

- Member of American Society of Civil Engineers (ASCE), Boston Society of Civil Engineers (BSCES), Water Environment Federation (WEF), and New England Water Environment Association (NEWEA)
- Member ACEC/MA Environmental Affairs Committee
- Member NEWEA Watershed Management Committee

Experience

Mr. Caufield is a Senior Environmental Engineer with Green. His expertise includes more than 25 years of professional experience spanning a wide variety of challenging civil and environmental projects. As part of his technical expertise Mr. Caufield is experienced at addressing and satisfying a variety of environmental permitting requirements for infrastructure and transportation public improvement projects. This includes environmental permitting requirements for the federal, state and local level as they pertain to various projects. Select projects demonstrating Mr. Caufield's recent experience are included below:

MassDOT, Peabody Bikeway, Peabody, MA

Mr. Caufield was responsible for all permits including an ENF Certificate, an Order of Conditions from the Peabody Conservation Commission, a Water Quality Certificate from the Massachusetts Department of Environmental Protection (MADEP) and an Approval of Coverage under the Army Corps of Engineers Massachusetts Programmatic General Permit. Significant coordination was made during the Notice of Intent process with the MADEP for 100-year flood storage compensatory areas and minimization of the wetland impacts. Through various avoidance and minimization measures the total wetland impact was kept under 5,000 s.f. to avoid a variance to the Wetland Protection Act. The final design incorporated the proposed wetland replication and compensatory areas along the bikeway.

MassDOT, Route 128 Add-a-Lane Project, Westwood/Dedham/ Needham, MA

Mr. Caufield was responsible for finishing Notice of Intent (NOI) submittals to the Conservation Commissions of the three towns and the Massachusetts Department of Environmental Protection (MADEP). Mr. Caufield was also active in the design of stormwater Best Management Practices along the highway alignment to address the 2008 MADEP Stormwater Management Standards. He also prepared the stormwater checklist and stormwater report for submittal with the NOI applications to the three towns.

MassDOT, Routes 8 and 57 Bridge Replacement, Sandisfield, MA

Mr. Caufield was responsible for obtaining a Water Quality Certificate (WQC) for this Bridge Replacement project over the West Branch, Farmington River. He supervised the preparation of plans for regulatory review, performed calculations required for inclusion in the WQC application submittal and wrote the project narrative that provided information supplementing what was listed on the WQC application form. Green performed these services as part of a team led by AECOM.

MassDOT, Route 19 Bridge Replacement, Brimfield, MA

Mr. Caufield was responsible for obtaining a Water Quality Certificate (WQC) for this bridge replacement project over Mill Brook. He supervised the preparation of plans for regulatory review, performed calculations required for inclusion in the WQC application submittal and wrote the project narrative that provided information supplementing what was listed on



Project Role

Environmental Permitting

the WQC application form. Mr. Caufield also coordinated with the MassDOT on incorporating protocols for protection of the Wood Turtle (a threatened species) into the project specifications.

MassDOT, Rte. 85 Bridge Replacement, Hopkinton/Southborough, MA

Mr. Caufield was responsible for obtaining a Water Quality Certificate (WQC) for this Bridge Replacement project over the Sudbury River. He supervised the preparation of plans for regulatory review, performed calculations required for inclusion in the WQC application submittal and wrote the project narrative that provided information supplementing what was listed on the WQC application form. Green performed these services as part of a team led by AECOM.

MassDOT, Lowell Street (Route 129) Reconstruction, Wilmington, MA

Mr. Caufield was responsible for obtaining all the necessary permits for this roadway reconstruction project. Environmental permits required for this project included; an Order of Conditions from the Wilmington Conservation Commission for the wetland near Maple Meadow Brook and a CE Checklist approval from FHWA.

MassDOT, Front Street Reconstruction, Chicopee, MA

Mr. Caufield was responsible for obtaining all the necessary permits for this roadway reconstruction project. He has obtained a "negative determination" from the Chicopee Conservation Commission by submitting a Request for Determination of Applicability per the Wetland Protection Act. He also prepared and submitted a CE Checklist to the MassDOT.

MassDOT, Route 18 (Bedford Street) Bridge Replacement, Bridgewater/Middleborough, MA

Mr. Caufield was responsible for obtaining a Water Quality Certificate (WQC) for this Bridge Replacement project over the Taunton River. He supervised the preparation of plans for regulatory review, performed calculations required for inclusion in the WQC application submittal, and wrote the project narrative that provided information supplementing what was listed on the WQC application form.

MassDOT, Rte 115 (Norfolk Rd) Bridge Replacement, Millis, MA

Mr. Caufield was responsible for obtaining a Water Quality Certificate (WQC) for this Bridge Replacement Project over the Charles River. He supervised the preparation of plans for regulatory review, and wrote the project narrative providing information supplementing what is listed on the WQC application form.

MassDOT, Center Street (Route 116) Reconstruction, Chicopee, MA

Mr. Caufield was responsible for filing the Notice of Intent (NOI) to obtain an Order of Conditions from the Chicopee Conservation Commission allowing the project to proceed. He supervised the preparation of plans for regulatory review of the project. He also made the project presentation at the Conservation Commission hearing.

Michael A. Cruz, P.E. Senior Structural Engineer



Project Role

Bridge Design

Education

Bachelor of Science in Civil Engineering with emphasis on Structural Engineering, University of Massachusetts, 1993

Licenses

Professional Engineer MA, ME, RI

Certification

Federal Highway Administration/National Highway Institute Training for Safety Inspection of In-Service Bridges

Professional Affiliations

American Society of Civil Engineers

Boston Society of Civil Engineers Section

Experience

Mr. Cruz, a Senior Engineer in the structural division of Green, has 17 years experience in the study, planning, analysis, design and structural inspection of bridges and structures of various types and sizes. Mr. Cruz has played a major part in the completion of bridge assignments in Green's Structural Division. He has completed numerous bridge assignments for Massachusetts Department of Transportation, Vermont Agency of Transportation, the Rhode Island Department of Transportation and the Maine Department of Transportation. Mr. Cruz has been the Project Engineer for seven continuous open ended bridge contracts with MassDOT where over a dozen bridges have been designed and constructed. Since 1999, Mr. Cruz has been continually providing structural engineering services on Green's VTrans Open-Ended Retainer contracts and in the past 10 years he has completed assignments under RIDOT's Comprehensive Bridge Rehabilitation Program. Representative projects demonstrating Mr. Cruz' experience are included below:

MassDOT, Open-Ended Bridge Contract, Statewide

Mr. Cruz has been the Structural Project Engineer for seven consecutive open-ended bridge design contracts for MassDOT. In the past 12 years, more than a dozen bridges have been successfully constructed throughout the Commonwealth. Projects have ranged from simple to complex structures. Through these contracts, Mr. Cruz has completed an impressive list of bridge projects.

MassDOT Accelerated Bridge Program, Statewide

Mr. Cruz is the Structural Project Engineer for this project. Green was selected for this contract to address the Commonwealth's aging infrastructure. Mr. Cruz is completing design services for Route 19 (Wales Rd.) Bridge over Mill Brook, Brimfield. The Route 19 project is the first MassDOT project which incorporates the new prestressed concrete Northeast Extreme Tee (NEXT) Beam, where the flanges are used as forms for the cast-in-place concrete deck, saving valuable construction time.

MassDOT Statewide Bridge Load Ratings

Mr. Cruz is the Structural Project Engineer for this project. Green was contracted by MassDOT to perform load ratings on an open-ended statewide bridge rating contract from 2009-2013. Bridge types in these assignments include steel and prestressed concrete multi-beam, concrete rigid frames, thru-truss and concrete slab structures, as well as concrete and metal culverts. Rating computations were performed using AASHTOWare Virtis, BRASS Culvert and STAAD software as well as in-house spreadsheets.

MassDOT, Route 1 and 1A Bridges over Route I-95/125, Dedham, MA

As a subconsultant to Parsons Transportation Group, Mr. Cruz was Green's structural engineer for the project. Responsibilities included the Preliminary and Final Design Services for the Route 1A Bridges D-05-044 and D-05-045 as part of the Route 128 Add-a-Lane. The project is under construction.



Project Role

Bridge Design

MBTA, Rehabilitation of the Merrimack River and Washington Street Bridges, Haverhill, MA

Mr. Cruz is Green's Structural Project Engineer responsible for bridge inspection, ratings and repair/rehabilitation design services for the Washington Street Bridge. He also provided input on the hydraulic and scour study for the Merrimack River Bridge prepared by our Water Resources Division.

General Engineering Service Contract, VT Rte 125 over Lemon Fair River, Cornwall, VT

Mr. Cruz is the Structural Project Engineer for this project. The project is a bridge replacement and roadway alignment improvement project. The proposed VT 125 Bridge will consist of a single span with an overall length of approximately 46.2 m. Design considerations included archaeological sites, Class II wetlands, slope stabilization and traffic maintenance. The project is scheduled for construction in 2010.

<u>Comprehensive Bridge Rehabilitation Program - Group 5, Various Locations in Rhode Island</u>

As part of RIDOT's Comprehensive Bridge Rehabilitation Program, Mr. Cruz is the Structural Project Engineer for the design of the replacement of two bridges: Newell Bridge in Cumberland and Newman Avenue Bridge in East Providence. The work consists of the preparation of final design plans and contract documents for the replacement of the existing superstructure.

Maine Dept. of Transportation, Bridge GCA Contract, 2001 – 2005

Mr. Cruz was Green's Structural Project Manager for this contract. Due to the state funding restraints, Green received one bridge assignment where Mr. Cruz completed the final design for the Bridge Street Bridge Reconstruction, Norway, ME which was successfully constructed.

MassDOT Interstate 495/Route2 Interchange Improvements, Taylor Street over Interstate 495 NB/SB, Littleton, MA

Mr. Cruz is the Structural Project Engineer for this project. Green is proposing to replace the existing 5-span structure with a two-span continuous structure opening up the sight lines along I-495. The proposed structure will consist of eight welded steel plate girders haunched at the pier and composite with an 8" concrete deck. The welded plate girders will be constructed using hybrid sections to reduce the depth of the beams and minimize the amount the roadway profile need to be raised. The hybrid section will be fabricated using 70KSI HPS (High Performance Steel) for the flanges over the pier.

Resume - Lamson Engineering Corporation

Name: Mr. Suthichai Saelim

<u>Title</u>: Design Engineer

Education: MS, U. of Massachusetts - Lowell / 2001 / Civil

BS, Khon Kaen University, Thailand, 1998 / Civil

Experience:

Mr. Saelim has 10 years of experience in bridge related engineering projects with the company. His experience includes boring inspection, foundation analysis and design, construction plans and specifications preparation, quantities and cost estimates for Massachusetts Department of Transportation (MassDOT) bridge rehabilitation and replacement projects; analysis and report preparation for the load rating assignments; and inspection and report preparation for inspection projects of MassDOT & Massachusetts Bay Transportation Authority (MBTA). His geotechnical experience includes the following:

- MassDOT Design-Build Cedar Street over Route 9, Wellesley Project responsible for boring program development, foundation analysis and geotechnical report preparation (via Gill Engineering Associates).
- MassDOT Design-Build CSX Bridge Bundle Project, responsible for foundation analysis and geotechnical report preparation for Rt. 148 Brookfield Bridge #B-26-003, Rt. 31 Charlton Bridge #C-06-014, Rt. 49 Spencer Bridge #S-23-024, and Rt. 67 West Brookfield Bridge #W-19-015 (via Fay, Spofford, & Thorndike).
- MassDOT Design-Build Lowell Bridge Bundle I-495 northbound and southbound bridges over Concord River, B&M and Woburn Street in foundation analysis and geotechnical report preparation (via AECOM).
- MassDOT Route 2 Concord Rotary project in boring monitoring, foundation analysis and geotechnical report preparation (via AECOM).
- MassDOT Route 128 Add-A-Lane, Bridges IV for 7 bridges Project in boring monitoring and geotechnical report preparation (via Louis Berger Group).
- MBTA Fairmont Stations Project in performing temporary earth support structures and retaining walls design, and preparation of construction plans (via Jacobs).





Section 3: Relevant Project Experience

Team Experience

AECOM has been involved with the design of many rail trails, bike paths, pedestrian facilities, and roadway projects with MassDOT. The firm prepared the preliminary and final design plans for the Assabet River Rail Trail in Hudson and Marlborough. AECOM is currently working with the Towns of Acton and Maynard on a 3.6 mile segment of the Assabet River Rail Trail. Brown, Richardson and Rowe, Green International and Lamson Engineering are all working with AECOM on the ARRT in Acton and Maynard.

AECOM was recently informed by MassDOT that our contract for the Route 2 Rotary Project will be amended to allow us to provide final design services for Segment 2B of the BFRT.



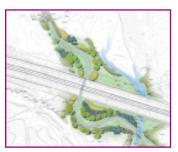


Assabet River Rail Trail at Route 85 crossing. Possible solution for crossing at Powder Mill Road

The AECOM team has worked on many projects for MassDOT and for local municipalities where MassDOT design review and construction funding were required. Our team is very familiar with the MassDOT design process. We are most proud of the fact that AECOM was selected by MassDOT as the first consultant

to provide Peer Review of other consultants Final Designs prior to MassDOT advertising for construction. With the recent upsurge in roadway and bridge construction MassDOT needed assistance to review these final design and process them for federal construction and Stimulus funding. AECOM has reviewed 35 projects (over \$200,000,000 in construction value) to date. MassDOT has indicated that numerous construction claims have been avoided, and construction bids have generally been lower than the estimates as a result of these types of peer reviews.





Segment 2B - BFRT - concept plan - crossing at Rt. 2

Project Descriptions

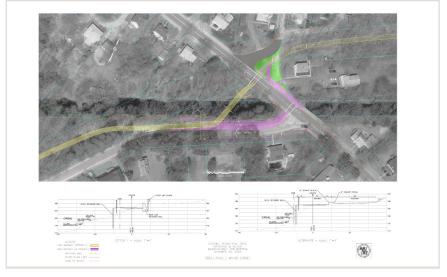
Following are descriptions of AECOM's transportation facility design projects in Massachusetts which meet the criteria for RFQ Submission Requirements #9 - projects within the last five years that had a contract amount of \$750,000.00 or more, and where MassDOT Highway Division final design approval and/or notice to proceed with construction was required or obtained. The following projects are attached.

- Acton and Maynard Assabet River Rail Trail
- Route 2 Concord Rotary Reconstruction
- Sagamore Rotary Grade Separation
- I-93 Tri-Town Interchange
- I-95/I-93/University Avenue/Dedham Street Interchanges
- Interstate 495 Lowell Bridge Bundle
- I-91 Deerfield Bridge Replacement
- William H. Dalton Memorial Bridge Rehabilitation
- I-93 Route 125/Ballardvale Street Interchange
- Providence Highway Bridge Replacement

Following these projects are additional AECOM projects relevant to this effort, as well as project descriptions for each of our M/WBE subconsultants.



Assabet River Rail Trail Permitting, Design & Construction Acton and Maynard, MA



AECOM Project Manager/Key Staff

N. Rubino, Program Manager A. Ogilvie, Civil Engineer R. Hajjar, Structural Engineer

Project Cost

\$870,000 (Design) \$8,000,000 (Construction)

Project Dates

2005 - Ongoing

MassDOT Highway Division Client Contact

Arthur Frost 10 Park Plaza, Room 4260 Boston, MA 02116

Client

Town of Maynard, MA Carolyn Britt, Planner 978-897-0564

Town of Acton Roland Bartl, Planner 978-264-9636 AECOM prepared and submitted a 25% design package in accordance with Massachusetts DOT Highway Division standards for the Maynard portion to be reviewed by the MassDOT Highway Division Project Review Committee (PRC) and then to be included on the Transportation Improvement Program (TIP). Field survey and base plans were prepared and environmental constraints were delineated and documented. The first segment to be designed in Maynard is approximately one mile long. Included in this first segment are connections to the national wildlife refuge, a pedestrian bridge over a canal that once provided water to the mills, and a grade crossing of Great Road. Meetings were held with the Conservation Commission to determine the wetlands limits. The at-grade crossing of Great Road was developed.

The second segment in Acton includes wetlands crossings as well as a crossing of an active commuter rail line. AECOM was under contract to the Town of Acton to determine the easement location for the Rail Trail across the Wedgewood property site.

Meetings were held with the property owners to gain input on the site operation, truck and vehicle circulation patterns, property lines, and security issues of the site. The owners determined that an easement along the front or sides of the property was not feasible due to heavy traffic use of the two site driveways, impacts to the existing detention basins, and security issues. An initial alignment was developed that crossed the rear parking lot between two distinct sections of the lot. and then traversed the wetland system to rejoin the historic rail alignment.

The section that crosses the wetland was staked out in the field to minimize clearing of trees and wetland growth. This alignment was reviewed with the Acton Conservation Commission and approved. AECOM presented an approach for construction of a pedestrian boardwalk called "Helical Screw Anchors" that has minimal impact to wetlands. Once accepted by the Conservation Commission, the easement was finalized and recorded.



Route 2 Concord Rotary Reconstruction

Concord, MA



AECOM Project Manager/Key Staff

P. Carter, Project Manager N. Rubino, Project Engineer E. Brown, Environmental D. Flynn, Traffic Engineer

Project Cost

\$3,151,000 (Design) \$60,000,000 (Construction)

Project Dates

2007 - Ongoing

MassDOT Highway Division Client Contact

Ms. Grace Arthur Project Manager 10 Park Plaza, Room 4260 Boston, MA 02116 (679) 738-251 AECOM is providing environmental permitting, public facilitation, and 25% design for reconstruction and removal of the rotary on Route 2 in Concord.

Work includes environmental site assessment within and adjacent to the proposed project area. AECOM is evaluating known and suspected oil and hazardous materials release sites to determine potential impacts to the project through database review, review of state and municipal files, historic maps and photographs, and site reconnaissance.

AECOM is conducting a mesoscale modeling analysis of project area mobile source emissions. VOC, NOx and CO2 emissions are being calculated for the existing case, and two future year no-build and build cases.

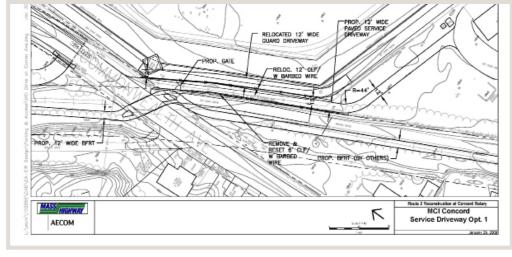
Services included GIS and visual impact analysis support, which involved developing constraints maps, evaluating impacts of various alternatives and simulating visual impacts.

AECOM was just informed by MassDOT that our contract will be amended to include final design and construction phase services for Segment 2B of the BFRT. To date AECOM has been leading the team of consultants to find a solution for crossing Route 2 with the BFRT. Now AECOM will complete the final design and provide construction services for this last link connecting Acton and Concord.



Route 2 Concord Rotary Reconstruction - BFRT

Segment 2B
Continued

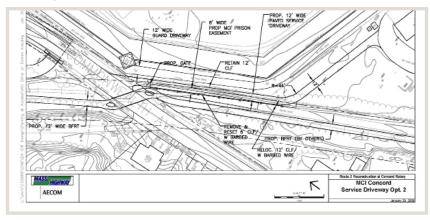


The BFRT alignment runs along the southerly boundary of the existing MCI Prison property from the BFRT crossing of Commonwealth Avenue to the crossing of Nashoba Brook. The 25% design shows the BFRT in the middle of the approximately 70 foot wide unused railroad right-of-way owned by the Executive Office of Transportation (EOT) as part of MassDOT. There are a number of factors that all come into play at the location of the BFRT crossing of Commonwealth Avenue including: the corner of the existing guard tower of the MCI Prison, an existing residential driveway, the proposed entrance to the BFRT parking area and the existing paved driveway within the unused railroad right of way currently utilized by the MCI Prison and the Town of Concord.

MassDOT and AECOM have been coordinating with MCI Prison regarding the crossing of the BFRT Segment 2B of Commonwealth Avenue. The MCI Prison would like to retain the existing paved and gravel driveway located around the southwestern corner of the prison which is currently located in the unused railroad right of way and would be

adjacent to the proposed BFRT. The Prison staff use the existing gravel driveway primarily for security cars and vans. Approximately 1-2 tractor trailer delivery trucks per day which originate from west on Route 2 will need to use this service driveway in leaving the prison. The Town of Concord uses the existing gravel driveway to access the land behind the prison for material stockpile and snow storage. The Prison staff prefers Option 2 which doesn't require moving the prison security fence which is currently located approximately 25 feet from the prison wall. Option 2 shows a 12 foot wide paved driveway within the unused railroad right of way which may require an easement. We understand that MCI Prison is working with the Town of Concord to transfer the southern portion of the property to the Town of Concord for housing with access at Winthrop Street and/or the location of the existing paved driveway along the BFRT.

AECOM will work with the BFRT Committee, the Town of Concord, MCI Prison and MassDOT to finalize these issues.





Sagamore Rotary Grade Separation

Bourne, MA



AECOM Project Manager/Key Staff

N. Rubino, Project Manager A. Ogilvie, Civil Engineer D. Flynn, Civil Engineer R. Hajjar, Structural Engineer

Project Cost

\$4,700,000 (Design) \$46,200,000 (Construction)

Project Dates

2006 - 2009

MassDOT Highway Division Client Contact

Mr. John Fallon 10 Park Plaza, Room 4260 Boston, MA 02116 (617) 973-7408



A Preferred Alternative was developed to grade separate the local and regional traffic movements at this heavily congested location. Traffic modeling and analysis was basic to the program. The grade separation reduced delays, improved air quality, enhanced safety, improved local access, and increased bicycle and pedestrian safety, all within an accelerated design, permitting, and construction schedule.

The AECOM team reconnected neighborhoods on either side of the rotary, coordinated public participation, assisted with Article 97 Legislation and reduced construction impacts all within an ACEC. Our team provided permitting, design, and construction phase services for the interchange, as well as coordination with utilities. Drainage was crucial, and was implemented using Best Management Practices (BMPs), due to the location in an Area of Critical Environmental Concern.

The project included an Access and Relocation Study, design, and permitting for a salt shed and maintenance depot. In addition, there was relocation and expansion of a park-and-ride lot. ROW impacts were minimized and early takings were performed. Developing plans in cooperation with MassDOT Highway Division, the community, and concerned businesses and citizens were key to success. The major public input process involved nearly 100 meetings with agencies, abutters, and stakeholders, as well as extensive coordination with ongoing work by the ACOE.

While design and permitting were critical, it was the attention to construction staging and phasing that made the project work. A \$2 million reforestation design addressed vast areas of denuded land. New pedestrian access along the highway connects to sidewalks in the business district, at the visitors' center, and to the path along the Canal, offering passersby an opportunity to explore this resort area on foot.



I-93 Tri Town (Lowell Junction) Interchange and Add-a-Lane Project

Wilmington, Andover and Tewksbury, MA



AECOM Project Manager/Key Staff

N. Rubino, Project Manager R. Devanna, Structural Engineer T. Santoro, Project Engineer

Project Cost

\$6,382,400 (Design) \$150,000,000 (Construction)

Project Dates

2009 - 2013

MassDOT Highway Division Client Contact

10 Park Plaza, Room 4260 Boston, MA 02116 Steve McLaughlin (617) 973-7245 Dianne Madden (617) 973-7477 Mike Furlong (617) 973-8067 The New I-93 Tri-Town (Lowell Junction) Interchange Project is located on I-93 at the intersection of the town boundary of Wilmington, Andover, and Tewksbury, and abutting the Ballardvale Industrial Park. This project will improve traffic and safety; extend the fourth lane on I-93 to the Route 495 interchange; and allow for development of 700 acres of abutting tracts of land.

The project will advance the recent Environmental Notification Form (ENF) through an Environmental Impact Statement (EIS), Environmental Impact Report (EIR), 25% Design review, and a wetland variance. Because of the potential for development and job growth, this project is a joint effort between MassDOT Highway Division and the Executive Office of Housing and Economic Development. The intent of the project is to incorporate the State's Smart Growth initiatives and "Form Based Development Codes" (FBDC) where possible.

The goal of this project is to improve traffic and safety, while advancing a new interchange in accordance with MassDOT Highway Division and Federal Highway Administration (FHWA) criteria. The project limits will be refined to select a preferred alternative that will advance to 25% design, and a wetlands variance.

The preferred alternative will likely be a combination of three alternatives in the ENF, providing access to I-93 from the east via a new roadway from the intersection of Research Drive and Ballardvale Street in Andover. This new roadway will cross the Haverhill Commuter Rail Line on a new bridge and provide a new connection to Burtt Road, About 800 feet further west there will be a new ramp system, and an overpass of I-93. It is anticipated that the preferred alternative will include the following:

- 7,600-feet of new ramps
- 4,000-feet of new local roadways
- 200-feet of bridge over I-93
- 100-foot bridge over Haverhill Commuter Rail
- 3 signalized intersections.

The project proposes an additional travel lane in each direction in the median of I-93 in Wilmington, Andover and Tewksbury from a point north of Ballardvale St. (Rte 125) 26,580 feet northward to the southerly ramps to and from I-495 northbound. The roadway addition will involve adding one 12-foot travel lane and one 4-foot shoulder in each direction in the median. It is anticipated that any proposed widening will take place in the existing 40-foot -wide median. Within this area, the median for the bridges over the Shawsheen River, B&M railroad, Vale Street and Dascomb Road will need to be reconstructed to allow for the new lanes.



I-95/I-93/University Avenue/Dedham Street Interchanges Intermediate Roadway Design

Canton, Dedham, Norwood, and Westwood, MA



AECOM Project Manager/Key Staff

N. Rubino, Project Manager P. Carter, Project Engineer D. Talcoff, Project Engineer M. Bisschop, Project Engineer D. Flynn, Project Engineer J. Sobel, Project Engineer E. Brown, Environmental

Project Cost

\$1,714,000 (Design) \$200,000,000 (Construction

Project Dates

2008 - 2011

MassDOT Highway Division Client Contact

Mr. Michael Furlong 10 Park Plaza Boston, MA 02116 (617) 973-8067

The I-95/I-93/University Avenue/ Dedham Street Interchanges represents a critical component in MassDOT's overall effort to improve traffic operations and safety between Route 9 in Wellesley and Route 24 in Randolph. While not part of the on-going Add-a-Lane project, operations at the junction of I-95 and I-93 clearly have considerable influence on the efficiency of travel along much of the Adda-Lane corridor. The Interchange Projects also afford MassDOT the opportunity to achieve a major environmental benefit at Fowl Meadow.

The project is being designed keeping the development of the Westwood Station project - a new, smart-growth based vision for University Avenue that includes new retail, office and residential uses - in mind as it affects the overall Interchanges functionality. Major components of the Interchange Project include /95/I/93 Interchange Refinement, Northern Stub/Salt Shed, University Avenue Ramps, Greenlodge Street over MBTA Tracks, and Dedham Street over the Neponset River, MBTA, and I-95

AECOM is responsible for preliminary design of the Greenlodge Street Bridge over the MBTA Tracks, preliminary Right of Way plans for the entire project, hazardous waste research for the entire project, and final design of the Dedham Street Corridor from University Avenue in Norwood to Kirby Drive in Canton. Dedham Street will be widened from two lanes to four from University Avenue to the new interchange at I-95. There currently exists an on-ramp from Dedham Street to I-95 SB. This project proposes a new off-ramp from I-95 NB to Dedham Street to reduce congestion at the Neponset Street exit to the south, and the I-95/I-93 exit to the north. It also acts as the south access to the Westwood Station development.

Two bridges over the Neponset River and the MBTA will be widened, while the existing bridge over I-95 will be replaced entirely. New signal will be installed at the intersection of University Avenue, the driveways at 725 and 770 Dedham Street, the on-ramp to I-95 SB and the off-ramp from I-95 NB as well as Shawmut Road.

AECOM is also responsible for the review of the ramp justification from the enhanced environmental notification form submitted by the developer of the Westwood station project. Managing review of traffic operations of the ramp with Dedham Street, length of the ramp, potential implications of ramp operations on I-95 northbound traffic flow, right-ofway impacts, conformance with MassDOT design requirements, and potential implications of an assumed one-lane exit ramp on the eventual design of the Dedham Street bridge.



Interstate 495 Lowell Bridge Bundle

Lowell MA



AECOM Project Manager/Key Staff

R. Devanna, Structural Engineer

A. Ogilvie, Civil Engineer

D. Flynn, Project Engineer

D. Talcoff, Project Engineer
J. Alwarden, Project Engineer

C. Baker, Project Engineer

R. Hajjar, Project Engineer

J. Sobel, Project Engineer

Project Cost

\$1,692,900 (Design) \$35,000,000 (Construction)

Project Dates

2009 - 2012

MassDOT Highway Division Client Contact

Scott D. Kelloway, PE District 4, Assistant Construction Engineer Accelerated Bridge Program 519 Appleton St. Arlington, MA 02476 (781)641-8496 As part of Governor Patrick's Massachusetts Recovery Plan to secure the state's economic future, an accelerate bridge program (ABP) repair project in Lowell is moving forward. Construction will be overseen by the Massachusetts Department of Transportation.

The \$36.9 million "Design/Build" project involves the reconstruction of both the northbound and southbound lanes of Interstate 495, including the repair of six bridges that were constructed in 1961. The contract was awarded to the Middlesex Corp./AECOM Design Build team.

Two of the bridges span the Boston & Maine and MBTA railroad, two cross Woburn Street and the remaining two span over the Concord River. The Concord River crossings include wildlife crossings and permitting for work in the river. Construction work is scheduled for completion by late 2010 with full completion of the work, including landscape restoration, by June 2011.

The project team began its public outreach with briefings for state and local officials, to be followed by regularly scheduled meetings for residents and stakeholders. Cable TV notices and flyers are also being prepared to inform the public of the project and traffic management shifts for construction staging.



I-91 Deerfield Bridge Replacement

Deerfield, MA



AECOM Project Manager/Key Staff

R. Hajjar, Project Manager R. Devanna, Structural Engineer T. Santoro, Project Engineer M. Bisschop, Project Engineer

Project Cost

\$1,4,000 (Design) \$40,000,000 (Construction)

Project Dates

2006 - 2011

MassDOT Highway Division Client Contact

Ms. Marie Rose 10 Park Plaza Boston. MA (617) 973-7427 This project will replace structurally deficient bridges, including substructure and superstructure, in the same alignment and end bearing positions as the existing structures. The Project is a footprint bridge reconstruction and involves replacement of existing structures with new structures of similar capacity in the same location.

MassDOT proposes full bridge replacement including substructure and superstructure. The scope calls for 2 12'-0" lanes with 12'-0" right shoulders and 10'-0" left shoulders on the bridge. It is anticipated that the bridge width expansion can be accomplished by adding to the embankment walls. While the existing pier will be removed, the footings below the river bottom will remain in place. New piers, located next to original footings, will be added. The proposed construction will consist of building a temporary bridge to minimize the disruption to traffic flow. Thus the reconstruction work will be conducted in two stages such that the temporary bridge will allow for two

lanes of vehicular traffic traveling either northbound or southbound on I-91. This temporary bridge construction will require a temporary road to be built in the existing median leading to and from the bridges.

The project scope also calls for decreasing the length of the bridges that span Deerfield Lower Road by utilizing an 80' single span structure to replace the three span structure. Construction will also consist of building a temporary bridge to minimize the disruption to traffic flow. Thus the reconstruction work will be done in two stages such that the one temporary bridge will allow for vehicular traffic traveling either northbound or southbound on I-91. In addition, the median trench that currently exists between the northbound and southbound bridges will be temporarily filled in order to accommodate the temporary road. Significant work in the water or from the water is proposed or anticipated for this project regarding the addition of new footings and piers.



William H. Dalton Memorial Bridge, Route 6 Cohasset Narrows Bridge Rehabilitation

Bourne to Wareham, MA



AECOM Project Manager/Key Staff

R. Devanna, Project Manager

Project Cost

\$800,000 (Design) \$5,000,000 (Construction)

Project Dates

2010 - 2011

MassDOT Highway Division Client Contact

Mr. Stephen Soma, PE Project Manager Ten Park Plaza Boston, MA 02116 (617) 973-8176 The William H. Dalton Memorial Bridge carries US Route 6/State Route 28 (the Cranberry Highway) over Cohasset Narrows at the Bourne-Wareham Town Line. The bridge is a five span concrete T-beam and slab structure supported on concrete granite faced gravity type abutment walls and piers. The bridge has a curb-to-curb width of 40 feet with a 4 foot 6 inch sidewalk on the north side and an overall length of 320 feet.

The bridge carries two lanes of traffic in each direction. The original structure was constructed in 1921 with widening and lengthening done in 1935. The Cohasset Narrow is a navigable waterway that opens into the Cape Cod Canal to the south. It is a tidal area with both direction flow. A salt water marsh adjacent to the area was identified. There is one 4-6"foot sidewalk on the north side of the existing bridge. The existing horizontal alignment of Cranberry Highway is tangent on the bridge, however curved on either approach to the structure.

With AECOM as the prime consultant, the proposed project will replace the existing structure with a new 350 foot long 3 span bridge. The superstructure shall consist of an 8" High Performance concrete deck supported by 10 New England Bulb Tee pre-cast and prestressed concrete girders. The substructure will be comprised of new bent piers and new integral abutments. The proposed piers will be granite faced reinforced concrete bridge piers. The new bridge deck will be 70-foot 9-inches wide accommodating a 56-foot roadway and two 6-foot wide sidewalks protected with S3-TL4 bridge railing.

It is estimated that approximately 300 feet of roadway approach work will be required at the Bourne and Wareham sides of the bridge.



I-93 Route 125/Ballardvale Street Interchange Upgrade

Wilmington, MA



AECOM Project Manager/Key Staff

N. Rubino, Project Manager A. Ogilvie, Civil Engineer M. Bisschop, Engineer D. Flynn, Civil Engineer R. Hajjar, Structural Engineer

Project Cost

\$1,237,964 (Design) \$8,500,000 (Construction)

Project Dates

1996 - 2008

MassDOT Highway Division Client Contact

Mr. Michael O'Dowd 10 Park Plaza, Suite 3170 Boston, MA 02116 (617) 973-7800 AECOM provided data collection and analysis of existing and proposed traffic volumes, conceptual design of the interchanges and nearby intersections, flagging of wetlands, analysis of surrounding habitat, presentations to the public, and geotechnical investigations for the I-93/Route 125 interchange improvements.

The project included relocation of 700 m (2,300 feet) of Route 125, 1,300 m (4,300 feet) of the I-93 ramp system, the signalization of three intersections, a grade separation of the I-93 northbound off-ramp with Route 125, storm drainage designs in accordance with the state's new stormwater policy, wetlands replication for approximately one are affected by the project, and one new on-ramp to I-93 northbound. The entire project limit is within the Zone II of a drinking water supply aquifer.

AECOM prepared a draft and final environmental report, coordinated with all participating agencies, and responded to comments. Once the final environmental document was reviewed, 25 percent design plans were completed for the preferred alternative. AECOM's environmental studies included MEPA regulations, FHWA regulations on environmental impacts and related procedures, Environmental and Section 4(f) documents. Section 106 of the Historic Preservation Act. Massachusetts Wetland Protection Act, Federal Clean Water Act, Massachusetts Clean Water Act, Army Corps of Engineers Memorandum entitled "Checklist for Highway Methodology", and Memorandum of Agreement between the Army Corps and the USEPA entitled "Guidelines.

AECOM identified and scoped the "Early Action". This allowed for the construction of 1/3 of the project at 1/3 of the construction cost to realize more than 50% of the traffic benefit. The "Early Action" ramp is currently open to traffic.



Providence Highway Bridge Replacement

Dedham, MA





AECOM Project Manager/Key Staff

R. Devanna, Project Manager R. Hajjar, Project Engineer

Project Cost

\$1,115,310 (Design) \$15,933,000 (Construction)

Project Dates

2004 - 2009

MassDOT Highway Division Client Contact

Ms. Marie Rose 10 Park Plaza Boston, MA 02116 (617) 973-7427 AECOM provided full design services for this major commuter artery in Boston metropolitan area. The project consisted of replacing existing structures with a single three-span continuous prestressed/post-tensioned concrete girder bridge. The foundation system includes use of drilled caissons through the existing pile mat and will be founded on underlying bedrock.

Location and orientation of the existing roadways dictated unconventional girder span ratios. This span ratio coupled with long girder spans required post-tensioning applications for girder continuity and splicing.
AECOM was the first to use state-of-the-art software Consplice-PT for the required post-tensioning analysis and design.

The project staging included shifting alignment of the new structure outside the present limits of the right-of-way to facilitate construction and maintenance of the heavy traffic volume.



Additional AECOM Projects



Assabet River Rail Trail

Hudson and Marlborough, MA





AECOM Project Manager/Key Staff

N. Rubino, Program Manager R. Devanna, Structural

D. Flynn, Traffic

Project Cost

\$350,000 (Design) \$3,000,000 (Construction)

Project Dates

2000 - 2005

MassDOT Highway Division Client Contact

Ms. Marie Rose 10 Park Plaza Boston. MA (617) 973-7427

Client

Ms. Michelle Ciccolo Assistant Administrator Town of Hudson 78 Main Street Hudson, MA 01749 (978) 562-9963



AECOM completed the feasibility study, route selection, bridge and roadway design, and at-grade crossings, for the Assabet River Rail Trail (ARRT), a 12.5-mile "rails to trails" project. The Marlborough to Hudson section is approximately 3.5 miles in length and provides a link between the two municipal centers. The trail accommodates cyclists, wheelchairs, pedestrians, rollerbladers, and cross country skiers. The project was funded through an enhancements grant, and construction was done by MassDOT Highway Division.

Included in the design is an underpass tunnel of the Route 85 connector roadway and a new deck on the former railroad trestle that crosses over the Assabet River. The Route 85 connector is a MassDOT Highway Division roadway that carries heavy traffic flow, and the Assabet River trestle is an existing structure that passes approximately 50 feet above the river. The underpass will be new construction while the trestle will be retrofitted for bicycle use, as well as a vista location high above the river.

Retrofit design for the trestle includes 6.75-inch-deep by 15-foot-long transverse glulam deck panels spanning across two existing trestle riveted girders. Due to 6-foot girder spacing, deck panels cantilever 4.5 feet to accommodate the 15-foot bridge deck width. The 15-foot deck width was established to allow for a vista location along the bridge. The deck is designed to accommodate H-10 emergency vehicle loading. Railings and curbs are pressure treated timber.

Other design considerations are hold-down connections of deck panels to girders, welding to wrought iron, smoothness of deck system for anticipated usage, deck drainage, replacement of timber wingwalls and maintaining historic railroad features. Hydraulic scour analysis of the existing trestle piers was also performed. Results required scour countermeasures to be placed around existing bridge piers. The MSE wingwalls will have a grayish stone finish to match the aesthetics of the existing stone abutments.



Assabet River Rail Trail Implementation Plan

Marlborough, Stow, Maynard, Hudson and Acton, MA



Project Cost \$10,000 (Design)

Project Completion 2001

Client

Ms. Michelle Ciccolo Assistant Administrator Town of Hudson 78 Main Street Hudson, MA 01749 (978) 562-9963



AECOM developed an implementation plan for the Assabet River Rail Trail, a 12.5-mile (20.1 km) "rails to trails" project. The trail commences in Marlborough and proceeds through Hudson, Stow and Maynard to the commuter rail station in Acton. Much of the proposed trail alignment parallels the Assabet River, with five crossings of the River. The trail will be designed for cyclists, wheelchairs, pedestrians, rollerbladers, and cross-country skiers as a 12-foot (3.66 m) wide paved path. The implementation plan compiled the following:

- Trail alignment
- Restrictions to the use of the historic railroad right of way
- Probability of obtaining ownership or an easement where needed
- Known hazardous materials locations
- Structures (bridges), alternate uses, or other issues that require additional construction cost

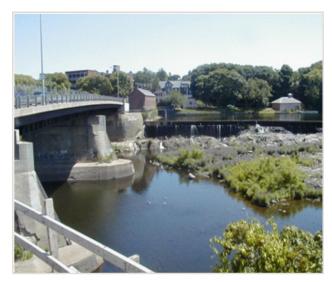
- Abutting municipal parcels, schools, and parks
- Current or proposed developments in the project vicinity
- Approximate locations of potential wetland areas
- Key employment centers and travel destinations
- Number of vehicle trip reductions
- Air quality and economic development benefits

This information was compiled into a report with supporting photographs, newspaper articles, support letters and other trail information. Each community's portion of the trail was divided into segments with defined beginning and ending points. A conceptual construction cost estimate was prepared for each segment. A preliminary phasing scenario was created prioritizing the segments by their "readiness" for design and construction.



Fall Overlook Greenway Planning and Design

Lowell, MA





Project Cost

\$278,700 (Design) \$1,750,000 (Construction)

Project Dates

2003 - 2008

Client

Charles Parrott National Park Service Lowell National Historical Park 67 Kirk Street Lowell, MA 01852 (978) 970-5000 AECOM was selected by the National Park Service to provide planning, environmental permitting, landscape architecture, structural and civil engineering and related services involved in the design of improvements consisting of a public walk and greenway along the northerly bank of the Merrimack River in the City of Lowell.

The intent of the project is to extend the public walk, known as the "Vandenberg Esplanade" in the Lowell Heritage State Park, easterly to the School Street Bridge. This will allow for pedestrian connections with the Canalway and Riverwalk greenways across the river into the inner core of the City. The walkway is proposed to be 8 feet wide and 3,500 feet in length.

AECOM's efforts included conceptual, preliminary and final design on the walkway alignment, grading and drainage, landscape areas, design of two pedestrian bridges, over two separate water inlet areas and identification of features such as handrails, benches, bike racks and plantings, pedestrian lighting and one wayside area for viewing the existing falls.



Concord River Greenway

Lowell, MA



Project Cost

\$510,000 (Design) \$5,000,000 (Construction)

Project Dates

2007 - Ongoing

Client

Diane N. Tradd Chief Design Planner City of Lowell 50 Arcand Drive Lowell, MA 01852 (978) 446-7200



This 1.5 mile river walk will connect downtown Lowell to the outlying residential area by following the Concord River. The Concord River is home to numerous wildlife and supports whitewater recreational events.

The Trail will be designed in some locations as a paved trail along the edge of the river. In other areas, due to limited space, boardwalks will be cantilevered out over the river bank to accommodate the Trail and bring the users much closer to the whitewater below. There are two at grade roadway crossing that will be designed with signals and/or traffic calming measures.

As a result of funding, the project has been divided into three Phases. Design and construction of Phases 1 and 2 are complete and open to the public. The design of Phase 3 is nearing completion and construction is anticipated in the Spring of 2011.

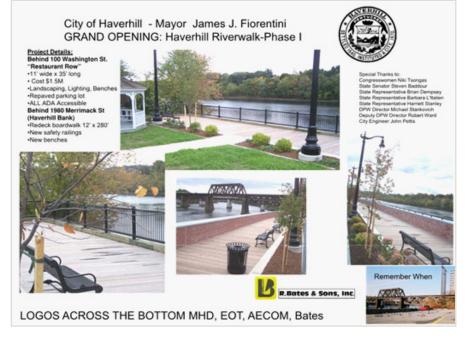
Phase 3 includes investigating cantilevering the boardwalk structure off the sides of the concrete river walls as the upland was fully developed in this industrial location. Also included in Phase 3 is the rehabilitation of an historic granite arch bridge span to allow the Trail to pass under the roadway and follow the riverbank.

Lowell has also received funding to provide art work locations along the Trail. These will be incorporated into seating areas along the Trail and the river.



Riverwalk Preliminary Design

Haverhill, MA



Project Cost

\$209,000 (Design)

Project Dates

2006 - 2009

Client

Mr. John Pettis III, PE City Engineer City of Haverhill Haverhill City Hall, Room 214 4 Summer Street Haverhill, MA (978) 324-2335 AECOM is working with the MassDOT and the City of Haverhill to improve and expand the Merrimack River Walkway in downtown Haverhill. The walkway will be a 2.5 mile loop when completed, circling the Merrimack River between the Upper County /Joseph C. Comeau Bridge and the Basiliere Bridge (Route 125). The proposed development will occur in two phases, described as Task A and Task B.

The first phase of the Haverhill -Merrimack River Walkway project, also referred to as the Riverwalk Gateway was constructed in 2009. AECOM prepared the plans for bid by the Massachusetts DOT Highway Division. The work included renovation of an existing parking lot in the rear of 130 Washington Street (referred to as "the TAP parking lot"). As part of the renovation, a new 300-foot long segment of Riverwalk was installed behind an existing 3-foot high flood wall. The new walkway consists of

12-foot wide wooden boardwalk separated from the existing TAP parking lot by a landscaped buffer space. The municipal parking lot was re-graded to provide positive drainage. New catch basins and new stormwater management structures were installed.

The second project task included preliminary design beginning at Riverfront Park at the terminus of Task A and then follows the river wall to the Main Street Bridge (Route 125) at the east end. The walkway will then cross the Main Street Bridge to the Bradford side of the Merrimack River and extend along the shore to the Conzalian Bridge. The existing Army Corps of Engineers flood control wall will support the walkway as it cantilevers out over the Merrimack River, a truly breathtaking location. The total length is approximately 3.000 feet on each side of the Merrimack River.



Upper Pawtucket Canal Walk Planning and Design Oversight

Lowell, MA



Project Cost

\$174,900 (Design) \$2,500,000 (Construction)

Project Dates

2003 - 2009

Client

Charles Parrott National Park Service Lowell National Historical Park 67 Kirk Street Lowell, MA 01852 (978) 970-5000 AECOM is working with the MassDOT and the City of Haverhill to improve and expand the Merrimack River Walkway in downtown Haverhill. The walkway will be a 2.5 mile loop when completed, circling the Merrimack River between the Upper County /Joseph C. Comeau Bridge and the Basiliere Bridge (Route 125). The proposed development will occur in two phases, described as Task A and Task B.

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Wayside Rail Trail

Waltham, MA



Project Cost \$2,400,000 (Construction)

Project DatesOngoing

Client

Ted Fields City Planner City of Waltham, MA 781-893-4040 ext. 3030



AECOM was selected by the City of Waltham for preliminary design services and funding assistance for a 3.2-mile portion of the Wayside Rail Trail extending from the Town of Belmont to the Town of Lincoln. The proposed Trail will be located within a 40-foot wide easement running within the MBTA's Central Massachusetts Railroad right of way.

The paved Trail will be 12-feet wide. There are a number of at-grade crossings along the Trail, which will be analyzed to determine what traffic control measures would be appropriate. The Trail also includes two existing structures: a timber structure over Beaver Brook, and a 200-foot span of Route 128. Earth Tech performed field inspection and structural analysis of these two structures.

Following the analysis, 25% designs were developed detailing the Trail's incorporation into these structures. These were submitted to MassDOT Highway Division for review.

The proposed Trail will be designed to Mass DOT Highway Division standards, and be generally located within an existing 40-foot wide easement running within the MBTA's Central Massachusetts Railroad right of way.

AECOM is assisting the City in obtaining enhancements funding to further advance the project in accordance with MassDOT Highway Division standards.

AECOM performed this work for the City of Waltham, with MassDOT design review and construction funding.



Reconstruction of Route 132

Barnstable, MA



Project Cost

\$865,000 (Design) \$9,200,000 (Construction)

Project Dates

1998 - 2008

Client

Town of Barnstable Robert A. Burgmann, PE Town Engineer 230 South Street Hyannis, MA 02601 (508) 862-4088 Barnstable's goal for this corridor was to create a "gateway" to the Village of Hyannis, as well as to improve traffic flow resulting from tourism and year round business. AECOM was selected by the Town of Barnstable to design roadway, drainage, and traffic improvements along Route 132 and Shoot Flying Hill Road.

The project consisted of expansion of the Route 132 corridor from two lanes to four, from Route 6 to Bearses Way. In addition to the 30-foot-wide landscaped median, a sidewalk/bike path, roadway drainage improvements, traffic signals at three locations, and a widening for a left turn storage lane at the Cape Cod Community College driveway are also included.

The total length of the project is 3,170 meters (10,400 feet or 2 miles). This roadway is under the jurisdiction of MassDOT and is classified as an urban arterial. The project includes traffic

analysis, a public participation phase, the development and submittal of an Enhanced Environmental Notification Form, and preparation of 25 percent, 75 percent, 100 percent, and PS&E design submittals.

Conceptual roadway designs and development of graphic representations of roadway/median configurations and landscaping scenarios were developed.

Concepts were also prepared for the Shoot Flying Hill Road and Route 6 Westbound Off -Ramp reconfiguration.

The proposed alternative will support the current and future plans for the corridor, and meet the design standards of both MassDOT and the Town. In addition, the project will result in a user-friendly corridor that maintains a "Cape Cod" style, and creates a notable Statement of Entrance to the Town of Barnstable and the Village of Hyannis.



Assabet River Rail Trail, Wedgewood Property Easement

Acton, MA



Project Cost

\$25,000 (Design) \$600,000 (Construction)

Project Completion 2004

Client

Roland Bartl Planner Town of Acton 978-264-9636 AECOM was under contract to the Town of Acton to determine the easement location for the Rail Trail across the Wedgewood property site.

Meetings were held with the property owners to gain input on the site operation, truck and vehicle circulation patterns, property lines, and security issues of the site. The owners determined that an easement along the front or sides of the property was not feasible due to heavy traffic use of the two site driveways, impacts to the existing detention basins, and security issues.

An initial alignment was developed that crossed the rear parking lot between two distinct sections of the lot, and then traversed the wetland system to rejoin the historic rail alignment.

The section that crosses the wetland was first staked out in the field to minimize clearing of trees and wetland growth. This alignment was reviewed with the Acton Conservation Commission and approved. AECOM presented a construction approach called "Helical Screw Anchors" to the Town. This approach for construction of a pedestrian boardwalk has minimal impact to the wetlands as the anchor screws are installed for the first span, the deck installed, then the next screws are installed, and the process is repeated. The majority of the work is accomplished from the newly constructed deck as the construction progresses across the wetland system.

Once accepted by the Conservation Commission, the easement was finalized and recorded.



Assabet River Rail Trail, Dimopoulos Property Easement

Maynard, MA



Project Cost

\$25,000 (Design) \$100,000 (Construction)

Project Completion 2006

Client

Carolyn Britt Planner Town of Maynard, MA 978-897-0564 AECOM was under contract to the Town of Maynard to determine the easement location for the Rail Trail across the Dimopoulos property site.

This site is an existing gas and service station at the corner of High Street, Sudbury Street, and Main Street. Meetings were held with the property owners to gain input on the site operation, truck and vehicle circulation patterns, property lines, and security issues of the site.

The owners determined that an easement along the High Street side of the property was feasibly for the ARRT.

An easement plan was prepared and presented to the Town for recording.



Bike Path Master Plan

Danvers, MA



Project Cost \$50,000 (Design)

Client City of Danvers, MA AECOM developed a Town-Wide Bike Path Master Plan for the Town of Danvers. The document serves as an addendum to the Town's Open Space and Recreation Plan. The overall concept of this assignment was to develop a system of bicycle facilities that is achievable, cost effective, useful and safe, while creating few adverse impacts on non-users and the environment.

The Master Plan included study and evaluation of separate bike path corridors, such as abandoned and active railroad rights of way, as well as the use of existing street corridors. Program requirements of the experienced and the child/casual adult rider were considered. Information was gathered from various sources including residents, the Town's Bicycle Planning Committee, the Police Department, Department of Public Works, the North Shore Bicycle Coalition, Bureau of Transportation and

Development, the Metropolitan Area Planning Commission, Central Transportation Planning Staff, the Executive Office of Transportation Construction, MBTA Planning, and Guilford Transportation Services.

Design Charrettes were held for the public to aid in the development of potential destination points and corridors. At these sessions, various groups and citizens highlighted activity points and scenic areas, and voiced their concerns and goals for the facility's development.

Specific project goals included identification of potential bike path routes within Danvers and potential connections to adjacent communities. Quantitative and qualitative analyses were prepared for each alternative, and a rating system was established. Identification of impediments to implementation were made and recommendations for program mitigation provided.



Keystone Viaduct, Allegheny Highlands Trail over SR 2006 and CSX Railroad

Somerset County, PA



Project Completion 2001

Client

Somerset County and Pennsylvania Department of Transportation The Keystone Viaduct, which formerly carried the tracks of the Western Maryland Railway Company, is located approximately two (2) miles east of Meyersdale Borough in Somerset County. The Viaduct is comprised of a 242-foot subdivided Warren Through Truss and eight (8) deck girder spans, for an overall length of 910 feet. The project objective was twofold: the incorporation of this abandoned structure into the Allegheny Highlands Trail for use by pedestrians and cyclists; and an improved alignment for SR 2006 which passes beneath the structure.

This scenic region of
Pennsylvania is a favorite
destination of nature lovers and
outdoor enthusiasts and the
Allegheny Highlands Trail provides access, as well as an ideal
vantage point from which to enjoy
it. The client was resolute about

preserving the main Warren truss span, as well as the deck girder spans.

As AECOM conducted the indepth inspection, prepared the combined inspection report and Type, Size and Location submission, developed the Final Design, provided construction consultation and construction inspection, preservation of not only the structure, but of the environment, endangered species, and the natural beauty of the area, were key considerations.

Three of the original deck girder spans and two piers were removed and replaced with a single-span curved two-girder system bridge. Removal of the piers allowed for realignment of underlying State Route 2006 to improve safety and roadway geometry.



Monongahela River Trail

Monongalia County, WV



Project Completion 2007

Client Monongahela River Trails Conservancy



AECOM was responsible for the development of plans, specifications, and cost estimates for a 3.5-mile section of the Mon River Trail from Van Voorhis, West Virginia to the Pennsylvania state line. AECOM engineers developed the following:

- Structure design
- · Drainage systems
- Utility relocation plans
- Agency coordination (WV Department of Environmental Protection)

The project included the rehabilitation of two existing steel girder bridge structures for re-use as part of the trail.

Services also included bidding/negotiation support and construction administration. Construction phase services included the following:

- Shop drawing review
- Construction inspection and documentation
- Schedule analysis
- Project close-out

AECOM received a letter of recommendation from the Mon River Trails Conservancy for our services on the Mon River Trail North Project. The letter stated: "The AECOM staff is very professional and focused on the needs of the rail trail project with attention to detail, budget, and time schedule. They have been very accommodating in working with a volunteer non-profit organization with flexibility in meeting times, listening closely to needs, offering solutions on past issues, and answering all levels of questions."



Brown, Richardson & Rowe



BICYCLE FACILITY PLANNING AND DESIGN



East Boston Greenway

Bicycle trails are growing in popularity and importance, both as alternative forms of transportation and as recreational resources. With the experience gained over 30 years, designers and managers of bike trails have learned how to improve the safety, function and legibility of bicycle trails and associated signage.

Every type of path has a variety of components that need to be integrated into a functionally and visually cohesive overall design. These elements include: pavement width and clearance, sight distance, shoulders, safety railings, vegetation management, intersection treatments, pavement markings, signage, overlooks and rest areas at scenic views, benches, picnic tables, shade structures and fencing. Methods to restrict motor vehicles and slow down bicycles at intersections and entries such as bollards, gates, s-curves and islands are also important.

Bicycle trails often pass through scenic areas, areas of environmental concern, and private property. Designers must be sensitive to ways to protect these resources and to create a successful interface between public and private property.

Brown, Richardson & Rowe has extensive experience with the design of new shared-use paths and the rehabilitation of existing trails in both rural and urban areas.

Bicycle trails are often many miles in length and pose maintenance and management challenges for the public agencies that are in charge of them. Effective maintenance and management planning, combined with the installation of long-lasting, durable materials, will reduce operating costs over the life of the bicycle trail.



Shared-use Bicycle Trail on Cape Cod Rail Trail

New Shared-Use Bicycle Trails

CAPE COD RAIL TRAIL

The Cape Cod Rail Trail is one of the oldest and most popular bike trails in the United States. It was also one of the first rail-to-trail projects in America when it opened in 1979. The route is incredibly diverse, traversing kettle ponds, cranberry bogs, and beaches in its more than thirty miles. The trail deteriorated over the years and developed several snake-shaped bumps. Two particularly treacherous sections have been nicknamed "The Anaconda" and "The Rattler."

The Massachusetts Department of Conservation and Recreation hired Fay Spofford & Thorndike (FST) and Brown, Richardson & Rowe to improve the safety of these 22 miles of special pathway.

The plan proceeded in two phases and cost a total of \$6.2 million. In the first phase, the trail was widened to eight or ten feet, the equestrian shoulder was repaired, invasive trees were removed, and intersections and parking lots along the trail were upgraded. The second phase involved work on the twelve-mile section of the trail that runs between Nickerson State Park in Brewster to LeCount Hollow Road in Wellfleet.



overlook on Quinebaug River Trail, Killingley, Connecticut

Quinebaug River Trail

We designed a shared use path with Fay Spofford & Thorndike in Killingly, Connecticut for which we received the "Pride in a Quiet Corner" Award. We chose a consistent palette of durable materials for the site furnishings appropriate to its context. A numbered, self-guided historic tour, which is incorporated into a series of river overlooks and acquaints visitors with the Quinebaug's Native American history.



мulti-use path, Bussey Brook Meadow, Arnold Arboretum

Arnold Arboretum,

Bussey Brook Meadow

This 12 to 15-foot wide, multi-use path was completed in 2002 and accommodates pedestrians, bicycles and rangers on horseback. The sustainable, densely-graded stone pack surfaced path passes through a 24-acre urban wild. It traverses the buffer zone of a wetland and passes over the MWRA high-level sewer and a portion of an MBTA tunnel.

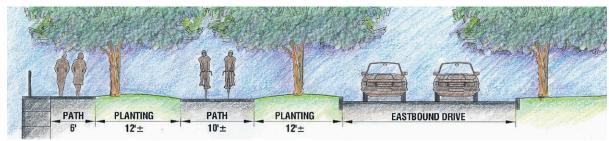


Two paths with median at Bremen Street Park, East Boston

EAST BOSTON GREENWAY

We have designed two segments of the East Boston Greenway shared-use trail, one through Constitution Beach and the other through the Bremen Street Park next to Logan Airport. People can cycle or walk from Boston Harbor to Airport Station. In some areas, the pedestrian path is separated from the bicycle trail by a planted median. In others, where space is limited, bicyclists and pedestrians share the same path, sometimes separated by a cobblestone median. Ultimately, the Greenway will be extended to Belle Isle Marsh.

REHABILITATED TRAILS



Two separate paths at Memorial Drive, Cambridge

MEMORIAL DRIVE REHABILITATION PROJECT

As part of a team, Brown, Richardson & Rowe designed a two-path system along the Charles River between the B.U. Longfellow Bridges. Two paths will replace the single narrow path along the river that does not safely accommodate the conflicting needs of the high daily volume of users Bicyclists and in-line skaters travel rapidly and can pose a hazard to the people who travel slowly such as walkers and wheelchair users. We researched five different types of paving, analyzed what path widths would be appropriate given the mature trees and available space and presented the alternatives to the DCR and the community.

A six-foot wide stabilized aggregate path for pedestrians and joggers will be at the river's edge and a ten-foot wide bituminous path for bicyclists and in-line skaters will be on the inland side of the parkland. Joggers requested a path with a softer surface than asphalt. To reduce pavement heaving from root growth of mature trees near the river, we specified a root pruning and root barrier program.

The project is being constructed in two phases. The first phase included the removal of a lane of vehicular traffic, the addition of green space to the park along the Charles River, improvements to storm drainage, and new pedestrian/bicycle connections to the Longfellow Bridge. Construction of the second phase will include the bicycle path, planting, and new shade shelters.



Bicycle Facility Planning and Design - 4

HISTORIC GRANITE OVERLOOKS

The Department of Conservation and Recreation (DCR) is undertaking the repair and preservation of landscape architect, Arthur Shurcliff's granite overlooks, the Storrow Memorial and the granite coping and path along the Storrow Lagoon. Brown, Richardson & Rowe is a member of the design team restoring these decorative elements designed by Shurcliff in the 1930's. The Overlooks include Commissioners Landing, the Dartmouth Street Overlook and the Gloucester Street Overlook. These structures are very popular with pedestrians and boaters, providing wonderful Charles River views and places to rest.

Project goals, as stated in DCR's Master Plan for the Charles River Basin, include: restore the historic overlooks and landings; improve conditions for bicycles and pedestrians along the Storrow Lagoon; and add historically reminiscent pedestrian lighting to the overlooks. BR&R has realized these goals into the construction documents. There will be separate trails for bicyclists and pedestrians. The pedestrian path will be closest to the river with the bicycle path set back closer to Storrow Drive.

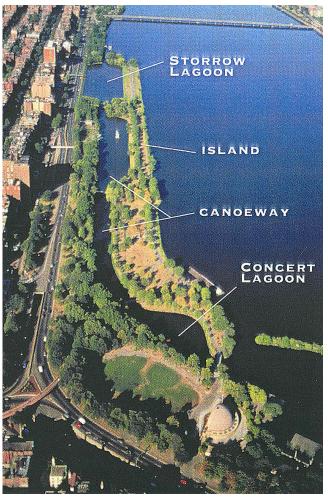


Photo from DCR's Master Plan for the Charles River Basin

LINEAR PATH

BR&R renovated a segment of Linear Path, a bicycle trail that runs from Somerville to Alewife Station through Russell Field in Cambridge. The rehabilitation of the 12-foot wide path included widening the shoulders, moving fixed objects away from the edge of the pavement, installing bicycle racks and directional signs, and providing shade along the path. These improvements were part of an \$8 million renovation of Russell Field and were completed in the summer of 2006.

The City of Cambridge has developed a very attractive integrated graphic system for signage. We used these graphic standards for identification, directional, and regulatory signs. The signs help visitors find their way to and from the path and to nearby attractions.

OTHER TRAILS

Brown, Richardson & Rowe has contributed to the design of other trails including the Bruce N. Freeman Memorial Bike Path in Chelmsford, Lowell and Westford, Massachusetts; a multi-use trail at Millennium Park, the former Gardner Street landfill in West Roxbury; six segments of Lowell's Canalway system; two segments of the riverwalk along the Merrimack River in Manchester, New Hampshire; two segments of Boston's Harborwalk; a trail system for Spectacle Island in Boston Harbor; and the Hall's Pond boardwalk in Brookline, Massachusetts.

We prepared a master plan for a riverfront park system in Manchester, New Hampshire that included three parks, the above-mentioned riverwalk, a bicycle trail and an historic walking tour. One of the products was a street furniture report that included details for all of the furnishings to be used in the system including an integrated signage system of trailblazer signs, freestanding identity signs, fence mounted signs, carved stone paving signs, banners and ornamental portals.



Multi-use trail, Millennium Park, West Roxbury



Canalway in Kerouac Park, Lowell - railing at edge of canal

BREMEN STREET PARK and EAST BOSTON MEMORIAL PARK

East Boston, Massachusetts



The 41.5-acre Bremen Street and East Boston Memorial Parks are Big Dig mitigation projects. Brown, Richardson & Rowe, Inc., worked with the East Boston community, FST/Rizzo, A Joint Venture and with City and State agencies. **Bremen Street Park** includes a granite spray pool, a guardhouse, a community garden, and an amphitheater. The park is a buffer between the neighborhood and the highway. Edge plantings and neighborhood connections, such as the East Boston Greenway multiuse trail, were important design elements. Brown, Richardson & Rowe collaborated with an artist on expressions of local history, a free-standing sculpture of Donald McKay, the father of the clipper ship, and on artist-inspired forms such as waves and a ship's capstan into the design.

Memorial Park contains a stadium and several team sports fields. It connects to the neighborhoods and to the new Airport Station and responds to community desires for a large, unified open space. Together the parks provide a significant recreational resource and effective buffer for the community. The bids for the project came in \$2 million under its budget of \$20 million. The parks opened in 2007.

BROWN, RICHARDSON ROWE

BREMEN STREET PARK and EAST BOSTON MEMORIAL PARK

East Boston, Massachusetts



120' x 60' Granite Spray Pool in Bremen Street Park

Brown, Richardson & Rowe collaborated with an artist to incorporate expressions of local history, both in a free-standing sculpture of Donald McKay, the father of the clipper ship, and by adapting artist-inspired forms such as waves and a ship's capstan into the design.

Memorial Park contains a stadium and several team sports fields. It connects to the neighborhoods and to the new Airport Station and responds to community desires for a large, unified open space. The two parks form a significant recreational resource and effective buffer for the community. The bids for the project came in \$2 million under its budget of \$20 million.



Capstan Fountain in Memorial Park

The 41.5-acre Bremen Street and East Boston Memorial Parks are Big Dig mitigation projects. Brown, Richardson & Rowe, Inc., worked with the East Boston community and with City and State agencies.

Bremen Street Park includes a granite spray pool, a guardhouse, playgrounds, 400 trees, 800 shrubs, 2700 perennials, 14,000 bulbs, a community garden, and an amphitheater. The park is a buffer between the neighborhood and the highway. Varied plantings and neighborhood connections, such as the East Boston Greenway multiuse trail, are important design elements.



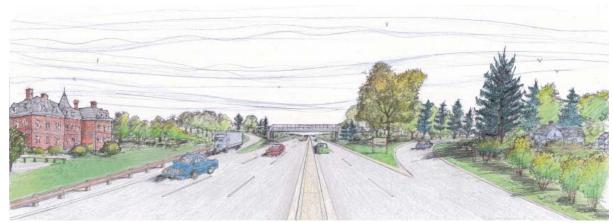
Path to Airport Station from Bremen Street Park



East Boston Greenway in Bremen Street Park

CONCORD ROTARY AT ROUTE 2

Concord, Massachusetts



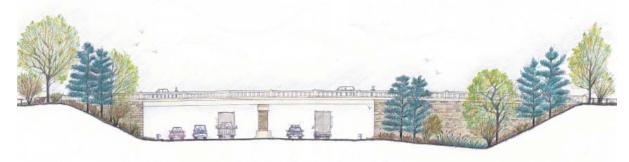
View looking west by MCI-Concord

Brown Richardson & Rowe is working with AECOM for MassHighway on the reconstruction of the Concord Rotary from Baker Avenue on the east to points west of the existing rotary. Proposals include highway alternatives, a Commonwealth Avenue bridge, and the extension of the Bruce Freeman Rail trail along the railroad right of way across Route 2 to points north.

Landscape designs include development of a new gateway planting at the proposed bridge, reforestation with native woodland and meadow plantings, and protection of views to existing agricultural fields.



Landscape Concept Plan



Double Span with Center Pier

Proposed Bridge

BROWN, RICHARDSON ROWE

CROSBY'S CORNER/ROUTE 2

Concord, Massachusetts



MassDOT plans to modify Route 2 in the vicinity of Crosby's Corner to improve the flow of through-traffic and provide safer access to abutting residences and businesses. Route 2 will be realigned and local traffic will be separated from Route 2 traffic on adjacent service roads. Residents of Lincoln and Concord, as well as community and regional organizations located within the project corridor have been involved in the proposed improvements.



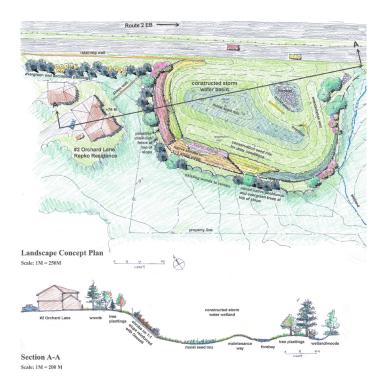
Stone Walls at Minute Man National Park

Brown, Richardson & Rowe working with Louis Berger, proposing native woody plantings and meadows for screening, reforestation, and slope stabilization along the edges, ramps, intersections and created wetlands, as well as low stone walls at Crosby's Corner. Nearby Minuteman National Park, Walden Woods, Walden Pond, stone walls, forests, meadows, and orchards have inspired the design.

CROSBY'S CORNER/ROUTE 2



Landscape Plantings and ledge treatment at Service Road along nature walkway



BRR's reforestation and slope plantings at constructed wetland developed with abutters and Lincoln ConCom in public meetings

The project includes widening Route 2 and addition of new ramps and constructed wetlands that impact mature forests, scenic walks, and abutter's properties and views.

Brown Richardson & Rowe has been working closely with the Conservation Commissions and Town Planning Boards and residents of Concord and Lincoln in a series of public meetings, site walks, and workshops to develop a consensus on landscape screening, reforestation, and mitgation where construction impacts are expected to occur.



Green International Affiliates, Inc.



Green was the prime consultant to survey and design 4.6 miles of bikeway in Peabody, MA. Green provided field survey and mapping; easement plan preparation; environmental permitting; conceptual, preliminary and final design of the bikeway, currently under construction. Construction of the project is funded by the MassDOT and Federal Highway Administration.



The Peabody Bikeway will follow the abandoned Boston and Maine (B&M) Railroad and runs parallel to Russell Street and Lowell Street. The Bikeway begins at the Middleton Town Line and ends at Northshore Mall, connecting over 465 acres of public-owned park space such as Corbiel Park, Radding Park, Lalikos Park and Farnham Park as well as providing an alternative transportation mode between neighborhoods and shopping areas including the Shop and Save Plaza and Northshore Mall. The proposed bikeway consists of a 10-foot bituminous concrete pavement and 2-foot crushed stone shoulders that will accommodate bicyclists, runners, walkers, wheelchair accessibility, rollerbladers, etc.

Green developed base plans at a scale of 1'' = 40' with 1' contours by utilizing photogrammetric mapping method. The mapping limits were 100' wide (50' on each side) along the centerline. Ground controls for photogrammetric mapping were established by Global Positioning System (GPS) survey. Green performed the field survey, obtaining property monuments and other supplemental topographic and utility

information not shown on the aerial maps. The field survey also included detailed topographic survey at all culvert crossings. Over 1,200 wetland flags were obtained by GPS survey and shown on the base plans. The property lines were shown on the base plans based on deed research and property monuments located field survey. Utility agencies/companies were contacted, and all available utility information was obtained and shown on the base plans. Green prepared permanent easement plans, which were filed in the Essex County Registry of Deeds.



Environmental permits obtained for this project included an ENF Certificate, an Order of Conditions from the Peabody Conservation Commission, and a Water Quality Certificate from the Massachusetts Department of Environmental Protection (DEP). Significant coordination was made during the Notice of Intent process with the Mass. DEP for 100-year flood storage compensatory areas and minimization of the wetland impacts. Through various avoidance and minimization measures, the total wetland impact was kept to under 5,000 s.f. to avoid a variance to the Wetland Protection Act. The final design incorporated the proposed wetland replications and compensatory areas along the bikeway.

Completion Date: 2009 (Constr.) Construction Cost:

\$2.7 mil.

Reference: Blair Haney, City Planner Dept. of Community Development

Tel: (978) 538-5781

Route 146 Bikeway Bridge over Blackstone Canal Remnant

Worcester, MA

Client: Parsons Transportation Group, Inc.





Green International Affiliates, Inc. (Green), as part of a team led by the Parsons Transportation Group, Inc., was responsible for the design of a pedestrian/bikeway bridge over the remnants of the Blackstone Canal in Worcester, Massachusetts. The bridge was part of the I-90/Route 146 Interchange Project that not only included construction of a 2.5 mile long bike path along Route 146 in Worcester and Millbury but included reconstruction and extension of Route 146 at the intersection of I-90. The Route 146 Bikeway (now called Blackstone River Bikeway) when fully completed will extend forty-eight miles from downtown Worcester, MA to India Point Park in Providence, RI.

The final design of the Route 146 Bikeway Bridge consisted of a two-span continuous structure with an overall length of 200'-0" and an overall width of 14'-2" carrying a 12'-0" bicycle lane and two 1'-1" concrete curbs. The bridge superstructure was constructed using four prestressed concrete adjacent box beams made continuous at the pier for live load. The bridge substructure consists of two stub abutments founded on drilled shafts and a single column hammer type pier. The use of drilled shaft foundations, particularly at the pier where a single shaft was used, minimized construction within the environmentally sensitive remnants of the Blackstone Canal. The structure also incorporated project-specific architectural fencing which was used throughout the Route 146 Interchange project.

Green also provided construction contract assistance by responding to Request for Information, meeting at the site to answer contractor's questions, reviewing shop drawings, clarifying the construction documents, and providing advice to resolve construction problems.

Completion Date: 2006 Reference: Gautam Sen

Construction Cost: \$450,000 MassDOT Project Manager

Tel: (617) 973-7879

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Route 18 Bridge over the Taunton River, Bridgewater/Middleborough, MA





Green International Affiliates, Inc. (Green) has designed the Route 18 Bridge over Taunton River, a two-span continuous structure, which replaced a three-span structurally deficient bridge. The new Route 18 Bridge has an overall length of 45.00 m and an overall width of 14.095 m. The roadway accommodates two 3.75 m travel lanes, two 2.50 m. shoulders, a 2.10 m sidewalk on the western side and a 495 mm safety curb on the eastern side of the bridge. The bridge superstructure was constructed using eight steel rolled beams composite with a 200 mm concrete deck. The substructure consists of two new stub abutments founded on drilled shafts and a single pier also supported on drilled shafts. Construction of the project was completed in 2008.

The bridge required construction of a new center pier within the Taunton River and removal of the previous bridge piers down to the river bed. The bridge approach work impacted Bordering Vegetated Wetlands (BVW); these impacts are being mitigated by replicating the wetland area on a 400-square foot portion of the river bank in the vicinity of the project site. The direct impacts of these wetland resources required an extensive environmental permitting process.



Green prepared and obtained a Water Quality Certification from the Massachusetts DEP. Green also coordinated with the Massachusetts Natural Heritage and Endangered Species Program on procedures to include in the Contract Documents to minimize impacts to two turtle species of concern with habitat close to the project area. Green also prepared materials for and coordinated with MassDOT and obtained an approval from the U.S. Army Corps of Engineers under the Corps' Massachusetts Programmatic General Permit (PGP) for work in the state's inland waters and wetlands.

In addition, Green provided construction contract assistance by responding to Request for Information, meeting at the site to answer contractor's questions, reviewing shop drawings, clarifying the construction documents, and providing advice to resolve construction problems. Green has also assisted the District Office by providing inspection services for the drilled shaft operation and analyzing construction claims regarding temporary sheeting quantities.

Completion Date: 2008 **Reference:** Alex Bardow

Construction Cost: \$3.2 mil. MassDOT Bridge Engineer

Tel: (617) 973-7571

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MASSDOT RELEVANT EXPERIENCE **ENVIRONMENTAL SERVICES**



Rte 128 Add-a-Lane/Rte 109/ Rte 135/Charles River/Great Plain Avenue Bridges, Needham and Dedham, MA

Client: Massachusetts Department of Transportation/Louis Berger Group

As a subconsultant to Louis Berger Group (LBG), Green is providing design and engineering services for this section of the Route 128 Add-a-Lane project. The existing mainline from south of West Street/Rte. 135 in Dedham to Great Plain Avenue in Needham will be realigned into the median. An additional lane will be created between the high speed lane and the median. Green was responsible for all main line roadway drainage design along this section of the highway intended to accommodate the additional traffic lane.

Green provided engineering services to assist LBG in the simulation of runoff from the existing and proposed watershed areas along the entire corridor of the 3.5 mile widening project. The work involved identifying all watershed and resource areas within the project limits, and also delineating the watershed areas. The watershed areas were sub-divided to sixteen sub-areas and were delineated utilizing USGS topographic maps. Green then developed hydrological models for each sub-area utilizing the U.S. Army Corps of Engineers HEC-HMS computer program.

Green is responsible for the design of several types of Best Management Practice (BMP) facilities for enhancement of water quality for post-construction runoff upon completion of the widening project. The BMP facilities are being designed in conformance with the latest Stormwater Management Standards set forth by the Massachusetts Department of Environmental Protection, with additional reference to MassDOT's Stormwater Handbook.

Green is also responsible for the design of BMP measures for control of nutrients from project areas tributary to the Charles River in response to the implementation of Total Maximum Daily Load (TMDL) water quality measures for the Charles River Basin. This TMDL for the Charles River was approved by the U.S. Environmental Protection Agency in the summer of 2007. This requires that Green adapt the design of the roadway storm drain systems and highway BMP measures to address applicable requirements of the Charles River's total phosphorus TMDL.

BMP design work includes:

- Installation of deep sump catch basins project wide
- Design of six (6) extended detention basins or infiltration basins, each with its own sedimentation trap
- Design of water quality swales with check dams to collect and treat runoff from drainage outfalls along the highway
- Design of leaching catch basins for infiltration of runoffs to reduce phosphorus in runoff and provide recharge to groundwater

Green was involved with the design of project-wide erosion and sediment control measures such as hay bales and silt fences project wide to protect wetland resource areas during construction.

In addition, Green was responsible for the design of utility relocations, the hydraulic report for the Charles River crossing and supplemental surveying services.

Green also completed application submittals for the Route 128 Add-a-Lane Project, along with supporting documentation, for filing Notice of Intent applications with the Conservation Commissions for the Towns

MASSDOT RELEVANT EXPERIENCE ENVIRONMENTAL SERVICES



of Westwood, Dedham and Needham. Green prepared the Drainage Report, Stormwater Report and supporting calculations for inclusion in these NOI submittal packages.

Completion Date: N/A Reference: Lawrence Cash

MassDOT

Construction Cost: N/A Project Manager

Tel: (617) 973-7384

Rte 128 Add-a-Lane/Bridge Contract IV, Highland Ave Interchange

Needham and Wellesley, MA

Client: Massachusetts Department of Transportation/JEK/HDR

Green is a subconsultant to the joint venture team of Jacobs Edwards and Kelcey/HDR for this major transportation improvement project for the Massachusetts Department of Transportation. The project consists of approximately 5.4 km of I-95 (Route 128) mainline roadway work and the design for the replacement of several bridges.

As part of our scope of work, Green addressed various environmental issues and concerns associated with the project. For example, Green is responsible for the assessing all existing and proposed watershed areas along the entire corridor of the 3.4 mile widening project. The work involves identifying all watershed and resource areas within the project limit, and also delineating the watershed areas. Watershed areas were delineated utilizing USGS topographic maps and were sub-divided to nine (9) sub-areas. Green will develop hydrological models for each sub-area utilizing the U.S. Army Corps of Engineers HEC-HMS computer program.

Green is designing several types of Best Management Practices (BMP) facilities to mitigate water quality impacts from the widening project. The BMP facilities were designed in conformance with the latest Stormwater Management Standards set forth by the Massachusetts Department of Environmental Protection with additional reference to MassDOT's Stormwater Handbook.

BMP's for the proposed Add-a-Lane facilities include measures that address the control of nutrients (total phosphorus) from project areas tributary to the Charles River in response to the implementations of Total Maximum Daily Load (TMDL) water quality measures for the Charles River Basin. Green's design for storm drain systems and highway BMP measures will address applicable requirements of the Charles River's total phosphorus TMDL.

BMP design work includes:

- Installation of deep sump catch basins project wide
- Design of five (5) basins which may either be extended detention basins or infiltration basins, each with its own sedimentation trap
- Design of infiltration BMP measures, such as leaching catch basins
- Design of water quality swales with check dams to collect and treat runoff from drainage outfalls along the highway

Completion Date: N/A Reference: Lawrence Cash Construction Cost: N/A MassDOT

MassDOT Project Mana

Project Manager Tel: (617) 973-7384





Section 4: M/WBE Participation

M/WBE Team Firms

AECOM is committed to the active participation of experienced MBE and WBE firms on our projects. For this effort, we will use three local firms including:

- Brown, Richardson & Rowe, located in Boston, will be responsible for landscape design and amenities. BRR has extensive experience in design of new shared-use paths and the rehabilitation of existing trails in suburban, rural and urban areas.
- Green International Affiliates, Inc. will provide support for Civil, Structural, and Right-of-Way services. The firm provides engineering services for bikeway and bridge and roadway design projects from their Westford, MA office.
- Lamson Engineering Corporation, located in Newton, MA, will provide expertise in geotechnical engineering services to this project.

M/WBE Documentation

Attached are M/WBE certifications for all of the team's subconsultants.



COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF BUSINESS AND TECHNOLOGY STATE OFFICE OF MINORITY AND WOMEN BUSINESS ASSISTANCE

Massachusetts Transportation Building Ten Park Plaza, Suite 3740, Boston, MA 02116

Internet: www.somwba.state.ma.us

TELEPHONE: (617) 973-8692

FACSIMILE: (617) 973-8637

DEVALU PATRICK GOVERNOR

TIMOTHY P. MURRAY LIEUTENANT GOVERNOR

EDITH A. SILVA EXECUTIVE DIRECTOR

March 19, 2009

Ms. Cornelia Brown Brown Richardson & Rowe, Inc. 3 Post Office Square Boston, MA 02210

egyptem (pagether) pagether (1966)

Dear Ms. Brown:

The State Office of Minority and Women Business Assistance (SOMWBA) is in receipt of your certification renewal information (application). This consists of your request to renew the certification of Brown Richardson & Rowe, Inc. and the required certification renewal information and documentation. Accordingly, SOMWBA has updated your file with this information and documentation. No substantive review of your company was done at this time.

Based on your certification renewal information (application), the certification of Brown Richardson & Rowe. Inc. as a woman business enterprise (WBE) with the business description of LANDSCAPE DESIGN AND PLANNING has been renewed effective the date of this letter. The company will remain listed in the SOMWBA Directory of certified businesses and The Central Register, which is published by the Office of the Secretary of State unless its certification is revoked. Unless revoked, this certification will last for a period of two years and will automatically expire as of April 1, 2011, unless by that date, the certification of the company is renewed again or the company is recertified.

To renew the company's certification at that time, you will need to submit the following information to SOMWBA no later than 30 business days prior to April 1, 2011.

- All company financial statements since the date of the company's then most recent SOMWBA certification; 1)
- A signed copy of all U.S. Tax Returns and Schedules since the date of the company's then most recent SOMWBA renewal;

กราย (ค.ศ. 1975) พระการยาทางเกิดสามารถสมารถ และเปล่าสิน (รายสาริกษาการถลายากมาสุด เห็ว แล้ว (ค.ศ. พ.ศ. 1976) สุดการทา

3) Corporations must submit all Annual Reports/Letters of Good Standing filed with the Secretary of (YOUR) State since the date of the company's then most recent renewal; and

<u>PLEASE NOTE THAT THE FOLLOWING ITEMS 4-6 CAN BE COMBINED ON ONE NOTARIZED STATEMENT</u>

4) A notarized statement that indicates:

"I certify under the pains and penalties of perjury that no significant changes affecting eligibility as a certified Minority/Minority-Women/Woman/ Portuguese business enterprise have occurred since the date of the company's then most recent date of SOMWBA certification as defined in State regulations 425 CMR 2.00 State Office of Minority and Women Business Assistance."

5) A notarized statement that indicates either "A or B" as referenced below.

- A. "I certify under the pains and penalties of perjury that (Insert your Company Name) has not received any contract(s) as a result of having been SOMWBA certified."
- B. "I certify under the pains and penalties of perjury that: (Insert your Company Name) has received a contract(s) as a result of having been SOMWBA certified." List all contract names, contract amounts and the names of the agencies with which you have contracted from the date of your last SOMWBA renewal."

6) A notarized statement that indicates:

"I certify under the pains and penalties of perjury that (Insert your Company Name) has (number) of employees for each year end given; include owner(s)."

Furthermore, you have a continuing duty to notify SOMWBA of a change in any information that is relevant to the firm's certification eligibility and to ensure that the information and documentation relied upon by SOMWBA to certify or to maintain the certification of the business enterprise is accurate, complete and not misleading. You are required to notify SOMWBA in writing of any change of such information or documentation within thirty calendar days. By way of example and not limitation, any change in ownership, control, investment, ongoing or independence may be considered material. Failure to abide by the continuing duty requirements shall constitute grounds for the business entity's decertification.

Additionally, every six years, certified companies that wish to remain certified must undergo a substantive review of their certification status with a SOMWBA certification specialist who will reevaluate the company to determine whether it continues to meet the applicable certification criteria. If you wish to recertify your company when it becomes due for substantive review, you will need to submit the applicable recertification application and all required information and documentation to SOMWBA no later than forty-five (45) business days prior to the date of certification expiration (i.e., the recertification date). At that time, a certification specialist will be assigned to evaluate your company and will make a report and recommendation to the Certification Committee (CC) on whether or not the company continues to meet the applicable certification criteria.

As provided above in 425 CMR 2.00, if your company has a change of address or telephone number, please send a signed letter within thirty days of the change on company letterhead to notify SOMWBA of the new address or telephone number.

During the period of your certification, if you have any further questions regarding your certification renewal, please direct them to Ms. Nedra D. White, Certification Specialist, at (617) 973-8648.

Very truly yours,

Edith A. Silva

Executive Director



COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF BUSINESS AND TECHNOLOGY STATE OFFICE OF MINORITY AND WOMEN BUSINESS ASSISTANCE

Massachusetts Transportation Building Ten Park Plaza, Suite 3740, Boston, MA 02116

Internet: www.somwba.state.ma.us

TELEPHONE: (617) 973-8692

FACSIMILE: (617) 973-8637

September 25, 2008

DEVAL L. PATRICK GOVERNOR TIMOTHY P. MURRAY LIEUTENANT GOVERNOR EDITH A. SILVA

EXECUTIVE DIRECTOR

Mr. Dipak Khaund Green International Affiliates, Inc. 239 Littleton Road, Suite 3 Westford, MA 01886

Dear Mr. Khaund:

The State Office of Minority and Women Business Assistance (SOMWBA) is in receipt of your certification renewal information (application). This consists of your request to renew the certification of **Green International Affiliates**, **Inc.** and the required certification renewal information and documentation. Accordingly, SOMWBA has updated your file with this information and documentation. No substantive review of your company was done at this time.

Based on your certification renewal information (application), the certification of **Green International Affiliates**, **Inc.** as a **minority** business enterprise (**MBE**) with the business description of **CONSULTING CIVIL ENGINEERS SPECIALIZING IN TRANSPORTATION**, **STRUCTURAL**, **WATER RESOURCES AND ENVIRONMENTAL AND CIVIL AND SITE ENGINEERING** has been renewed effective the date of this letter. The company will remain listed in the SOMWBA Directory of certified businesses and The Central Register, which is published by the Office of the Secretary of State unless its certification is revoked. Unless revoked, this certification will last for a period of two years and will automatically expire as of **October 1**, **2010**, unless by that date, the certification of the company is renewed again or the company is recertified.

To renew the company's certification at that time, you will need to submit the following information to SOMWBA no later than 30 business days prior to **October 1, 2010**.

- 1) All company financial statements since the date of the company's then most recent SOMWBA certification;
- A <u>signed</u> copy of all U.S. Tax Returns and Schedules since the date of the company's then most recent SOMWBA renewal:
- 3) Corporations must submit all Annual Reports/Letters of Good Standing filed with the Secretary of (YOUR) State since the date of the company's then most recent renewal; and

PLEASE NOTE THAT ITEMS 4-6 CAN BE COMBINED ON ONE NOTARIZED STATEMENT

- 4) A notarized statement that indicates:
 - A. "I certify under the pains and penalties of perjury that no significant changes affecting eligibility as a certified Minority/Minority-Woman/Woman/Portuguese business enterprise have occurred since the date of the company's then most recent date of SOMWBA certification as defined in State regulations 425 CMR 2.00 State Office of Minority and Women Business Assistance."
- 5) A notarized statement that indicates either "A or B" as referenced below.

- A. "I certify under the pains and penalties of perjury that (Insert your Company Name) has not received any contract(s) as a result of having been SOMWBA certified."
- B. "I certify under the pains and penalties of perjury that: (Insert your Company Name) has received a contract(s) as a result of having been SOMWBA certified." List all contract names, contract amounts and the names of the agencies with which you have contracted from the date of your last SOMWBA renewal."

6) A notarized statement that indicates:

A. "I certify under the pains and penalties of perjury that (Insert your Company Name) has (number) of employees for each year end given; include owner(s)."

Furthermore, you have a continuing duty to notify SOMWBA of a change in any information that is relevant to the firm's certification eligibility and to ensure that the information and documentation relied upon by SOMWBA to certify or to maintain the certification of the business enterprise is accurate, complete and not misleading. You are required to notify SOMWBA in writing of any change of such information or documentation within thirty calendar days. By way of example and not limitation, any change in ownership, control, investment, ongoing or independence may be considered material. Failure to abide by the continuing duty requirements shall constitute grounds for the business entity's decertification.

Additionally, every six years, certified companies that wish to remain certified must undergo a substantive review of their certification status with a SOMWBA certification specialist who will re-evaluate the company to determine whether it continues to meet the applicable certification criteria. If you wish to recertify your company when it becomes due for substantive review, you will need to submit the applicable recertification application and all required information and documentation to SOMWBA no later than forty-five (45) business days prior to the date of certification expiration (i.e., the recertification date). At that time, a certification specialist will be assigned to evaluate your company and will make a report and recommendation to the Certification Committee (CC) on whether or not the company continues to meet the applicable certification criteria.

As provided above in 425 CMR 2.00, if your company has a change of address or telephone number, please send a signed letter within thirty days of the change on company letterhead to notify SOMWBA of the new address or telephone number.

During the period of your certification, if you have any further questions regarding your certification renewal, please direct them to Ms. Nedra D. White, Certification Specialist, (617)973-8648.

Very truly yours,

Mark Waterbury

Deputy Director, Certification



GREEN INTERNATIONAL AFFILIATES, INC.

239 LITTLETON ROAD, SUITE 3, WESTFORD, MA 01886 TEL (978) 923-0400 FAX (978) 923-0404

October 27, 2010

AECOM 300 Baker Ave., Suite #290 Concord, MA 01742

Subject: Bruce Freeman Rail Trail

Ladies and Gentlemen:

Please be advised that Green International Affiliates, Inc. (Green) has submitted its application for DBE/MBE certification renewal and it is currently under review by the Commonwealth of Massachusetts Supplier Diversity Office (SDO).

Although the attached MBE certification letter states the Green's MBE certification is expired as of October 1, 2010, please be advised that according to the SDO, Green's MBE certification status is to remain valid during the renewal review period. If you have any further questions or concerns regarding Green's MBE status please contact Ms. Nedra D. White, MBE Renewal Specialist, Massachusetts Supplier Diversity Office. She can be reached at (617) 973-8648.

Very truly yours,

Green International Affiliates, Inc.

Ko Ishikura, P.E.

300 Seli kun

President



COMMONWEALTH OF MASSACHUSETTS

ADMINISTRATION AND FINANCE

SUPPLIER DIVERSITY OFFICE

Massachusetts Transportation Building Ten Park Plaza, Suite 3740, Boston, MA 02116 http://www.somwba.state.ma.us

DEVAL L. PATRICK GOVERNOR

Telephone (617) 973-8692

TIMOTHY P. MURRAY LIEUTENANT GOVERNOR

Facsimile (617) 973-8637

REGINALD A. NUNNALLY EXECUTIVE DIRECTOR

June 15, 2010

Mr. Kin C. Lam Lamson Engineering Corporation 437 Cherry Street, #109 Newton, MA 02465

Dear Mr. Lam:

The Massachusetts Supplier Diversity Office (SDO) formerly known as the State Office of Minority and Women Business Assistance (SOMWBA) is in receipt of your certification renewal information (application). This consists of your request to renew the certification of Lamson Engineering Corporation and the required certification renewal information and documentation. Accordingly, SDO (f/k/a: SOMWBA) has updated your file with this information and documentation. No substantive review of your company was done at this time.

Based on your certification renewal information (application), the certification of Lamson Engineering Corporation as a minority-owned business enterprise (MBE) with the business description of STRUCTURAL, CIVIL, GEOTECHNICAL AND HYDRAULICS ENGINEERING has been renewed effective the date of this letter. The company will remain listed in the SDO (f/k/a: SOMWBA) Directory of certified businesses and The Central Register, which is published by the Office of the Secretary of State unless its certification is revoked. Unless revoked, this certification will last for a period of two years and will automatically expire as of May 15, 2012, unless by that date, the certification of the company is renewed again or the company is recertified.

To renew the company's certification at that time, you will need to submit the following information to SDO (f/k/a: SOMWBA) no later than 30 business days prior to May 15, 2012.

- All company financial statements since the date of the company's then most recent SDO (f/k/a: SDO (f/k/a: SOMWBA) certification;
- 2) A <u>signed</u> copy of all U.S. Tax Returns and Schedules since the date of the company's then most recent SDO (f/k/a: SOMWBA) renewal;
- 3) Corporations must submit all Annual Reports/Letters of Good Standing filed with the Secretary of (YOUR) State since the date of the company's then most recent renewal; and

<u>PLEASE NOTE THAT THE FOLLOWING ITEMS 4-6 CAN BE COMBINED ON ONE NOTARIZED STATEMENT</u>

4) A notarized statement that indicates:

"I certify under the pains and penalties of perjury that no significant changes affecting eligibility as a certified Minority/Minority-Women/Woman business enterprise have occurred since the date of the



company's then most recent date of SDO (f/k/a: SOMWBA) certification as defined in State regulations 425 CMR 2.00 The Massachusetts Supplier Diversity Office."

5) A notarized statement that indicates either "A or B" as referenced below.

- A. "I certify under the pains and penalties of perjury that (Insert your Company Name) has not received any contract(s) as a result of having been SDO (f/k/a: SOMWBA) certified."
- B. "I certify under the pains and penalties of perjury that: (Insert your Company Name) has received a contract(s) as a result of having been SDO (f/k/a: SOMWBA) certified." List all contract names, contract amounts and the names of the agencies with which you have contracted from the date of your last SDO (f/k/a: SOMWBA) renewal."

6) A notarized statement that indicates:

"I certify under the pains and penalties of perjury that (Insert your Company Name) has (number) of employees for each year end given; include owner(s):"

Furthermore, you have a continuing duty to notify SDO (f/k/a: SOMWBA) of a change in any information that is relevant to the firm's certification eligibility and to ensure that the information and documentation relied upon by SDO (f/k/a: SOMWBA) to certify or to maintain the certification of the business enterprise is accurate, complete and not misleading. You are required to notify SDO (f/k/a: SOMWBA) in writing of any change of such information or documentation within thirty calendar days. By way of example and not limitation, any change in ownership, control, investment, ongoing or independence may be considered material. Failure to abide by the continuing duty requirements shall constitute grounds for the business entity's decertification.

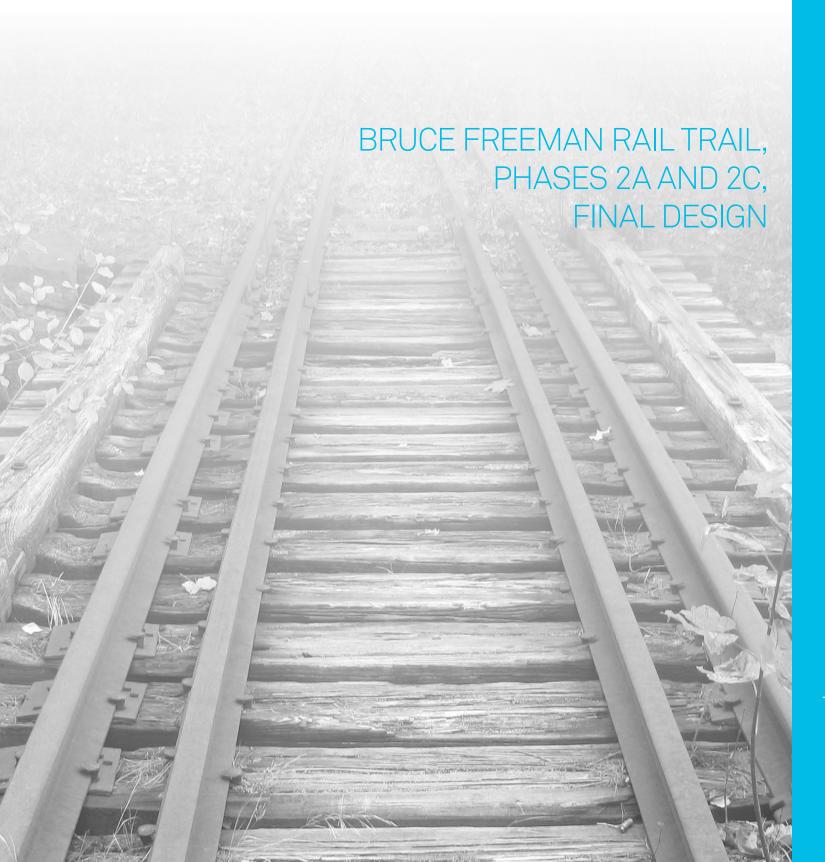
Additionally, every six years, certified companies that wish to remain certified must undergo a substantive review of their certification status with a SDO (f/k/a: SOMWBA) certification specialist who will re-evaluate the company to determine whether it continues to meet the applicable certification criteria. If you wish to recertify your company when it becomes due for substantive review, you will need to submit the applicable recertification application and all required information and documentation to SDO (f/k/a: SOMWBA) no later than forty-five (45) business days prior to the date of certification expiration (i.e., the recertification date). At that time, a certification specialist will be assigned to evaluate your company and will make a report and recommendation to the Certification Committee (CC) on whether or not the company continues to meet the applicable certification criteria.

As provided above in 425 CMR 2.00, if your company has a change of address or telephone number, please send a signed letter within thirty days of the change on company letterhead to notify SDO (f/k/a: SOMWBA) of the new address or telephone number.

During the period of your certification, if you have any further questions regarding your certification renewal, please direct them to Ms. Nedra D. White, Certification Specialist, at (617) 973-8648.

Very truly your

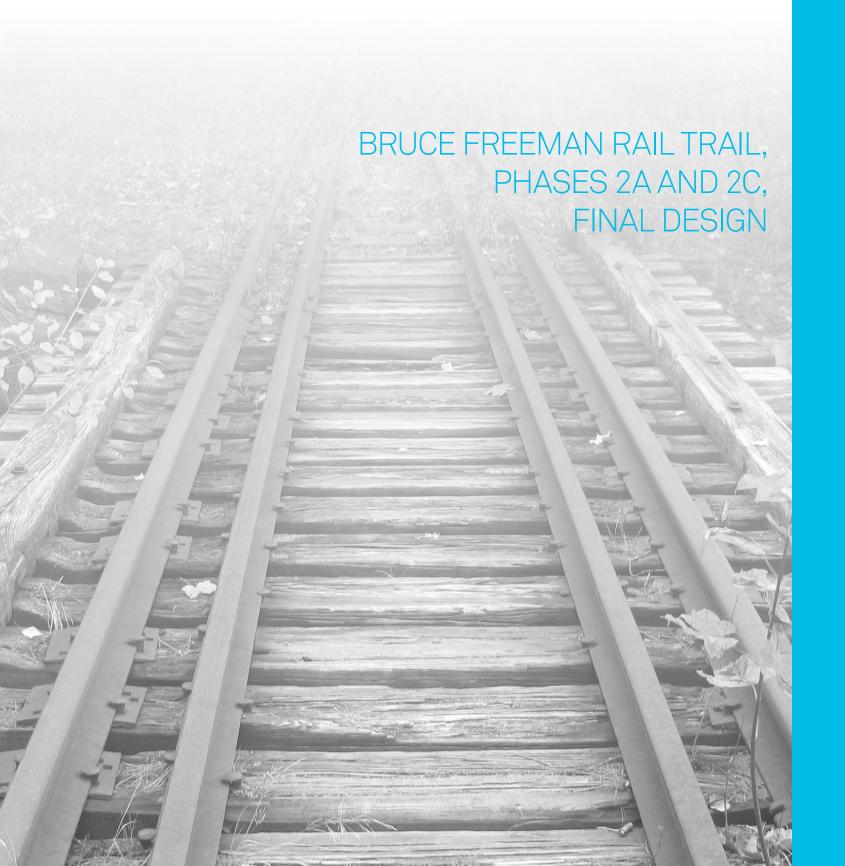
Reginald A. Nunnally Executive Director



CERTIFICATE OF NON-COLLUSION

The undersigned hereby certifies under the penalties of perjury that this bid, proposal, or submission has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certificate, the word person shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

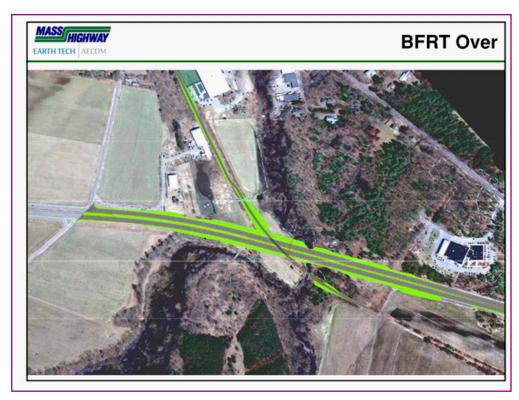
Signature of person signing the bid, proposal, or submission
AECOM Technical Services, Inc.
Name of business
CERTIFICATE OF TAX COMPLIANCE
Pursuant to Ch.62C, S.49A (b) of the Massachusetts General Laws, I,
Pompeo Casale
(Name), authorized signatory for
AECOM Technical Services, Inc. , do hereby certify under the pains and penalties of perjury
(Name of Consultant)
that said contractor has complied with all laws of the Commonwealth of Massachusetts relating
to taxes.
Consultant, By:
(Signature of authorized representative)
New England Transportation Manager
(Title)
November 4, 2010
(Date)

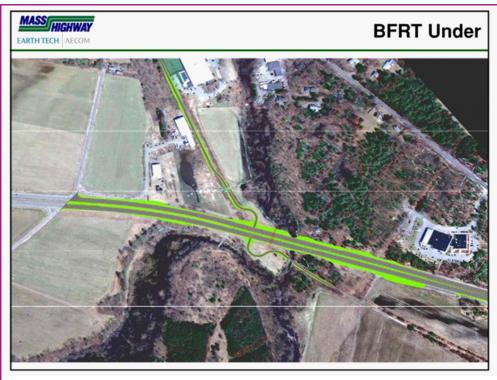




Appendix: Sample Materials

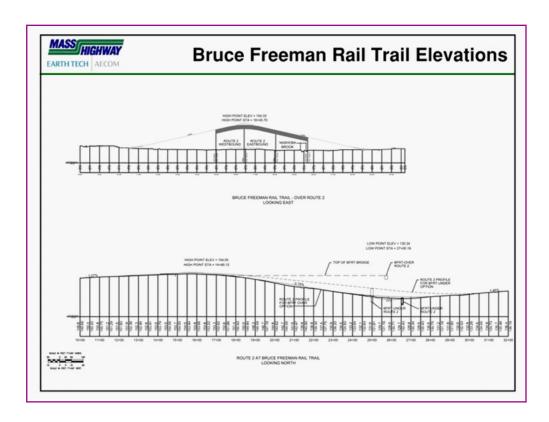
Route 2 Project - Graphics from Board of Selectman Presentations and Open Houses Town of Acton and Town of Concord

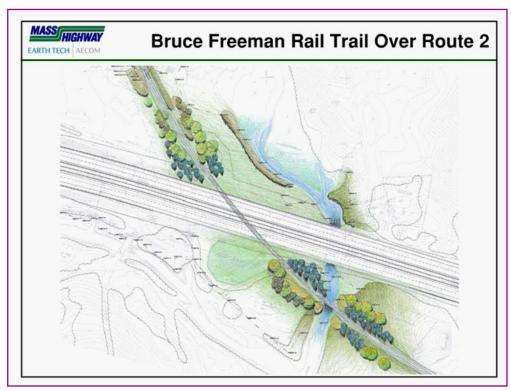






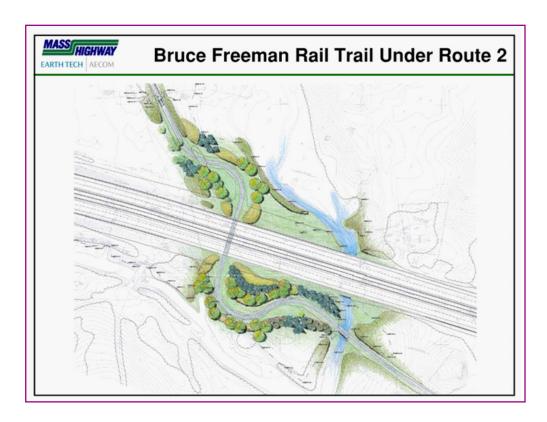
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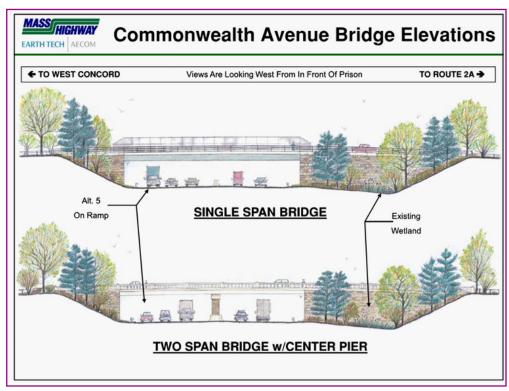






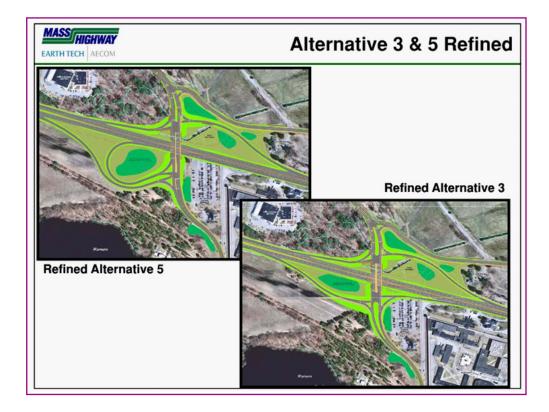
Route 2 Project - Graphics from Board of Selectman Presentations and Open Houses Town of Acton and Town of Concord

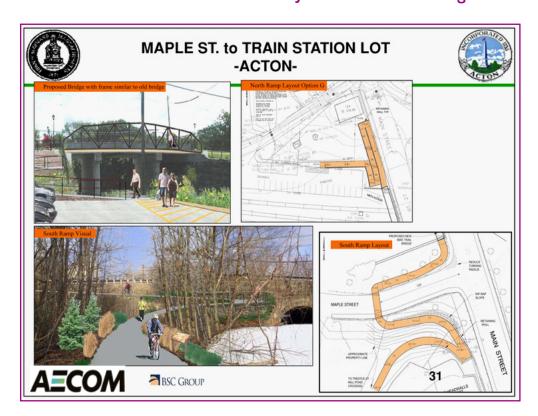




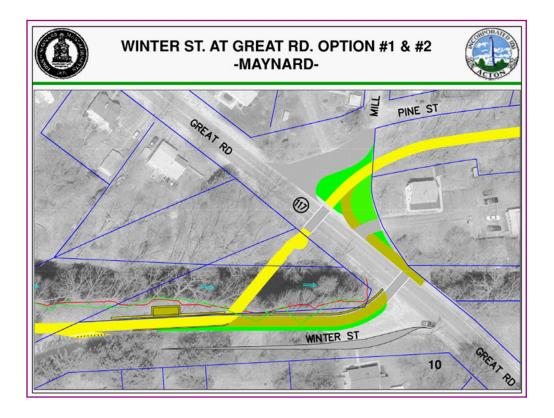


Route 2 Project - Graphics from Board of Selectman Presentations and Open Houses Town of Acton and Town of Concord

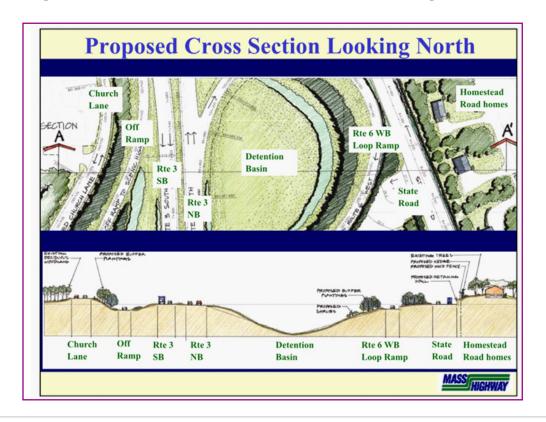






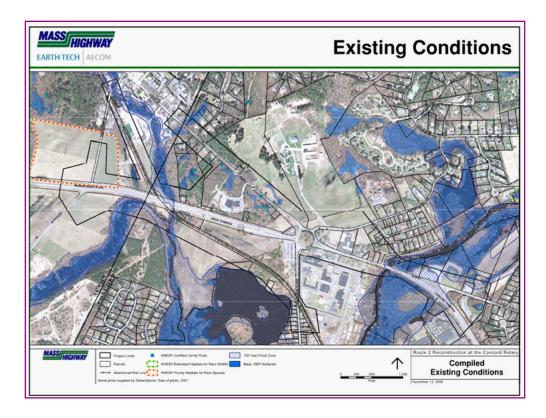


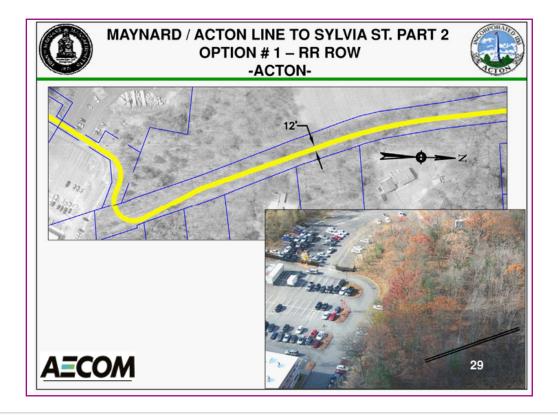
Graphic from Sagamore Rotary Grade Separation Project - 25% Design Public Hearing



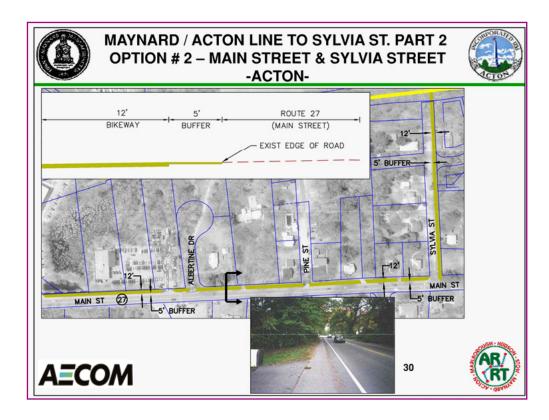


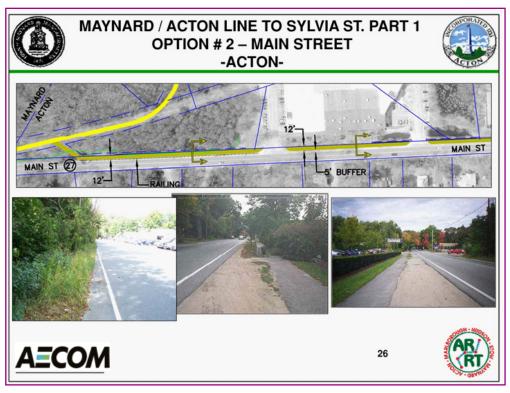
Route 2 Project - Graphics from Board of Selectman Presentations and Open Houses Town of Acton and Town of Concord



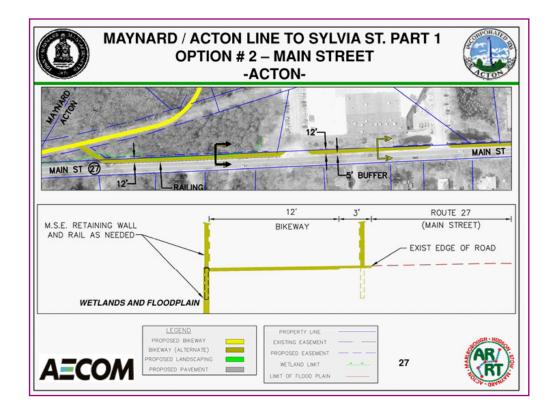




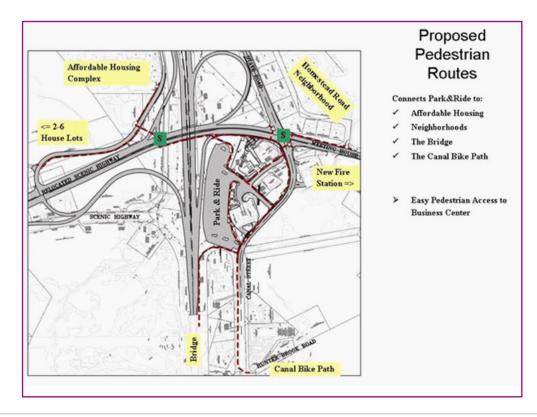






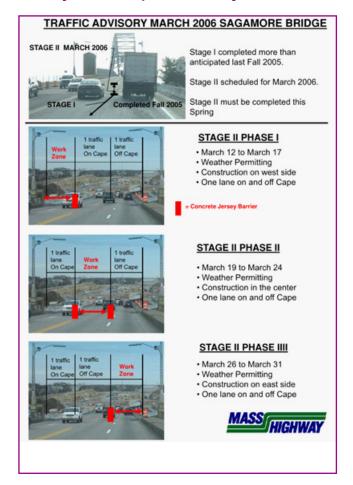


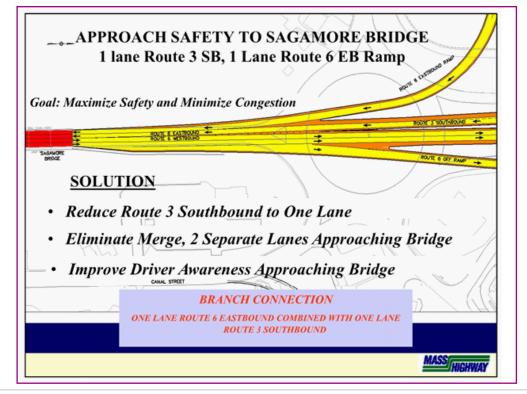
Graphic from Sagamore Rotary Grade Separation Project





Graphic from Sagamore Rotary Grade Separation Project







SimTraffic Microsimulation - Route 2 at Concord Rotary and Baker Avenue

These are screen shots of a traffic simulation model. The model when running shows how traffic moves through the project and where the problems are. These are very good in showing t the public how various scenarios work and deciding on what the best solution will be.



